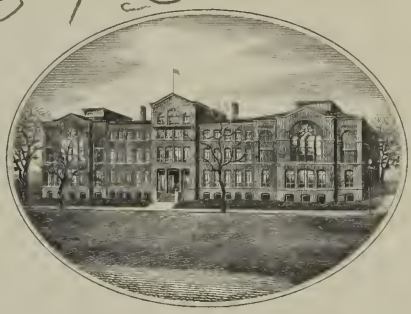

THE

ANATOMY

OF THE

GRAVID UTERUS.

WITH

PRACTICAL INFERENCES

RELATIVE TO

PREGNANCY AND LABOUR.

BY JOHN BURNS,
Surgeon in Glasgow.

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TO

ROBERT CLEGHORN, M. D.

PHYSICIAN TO THE ROYAL INFIRMARY,

AND LECTURER ON CHEMISTRY IN THE UNIVERSITY OF GLASGOW;

AND

JAMES MUIR, ESQ.

SURGEON IN GLASGOW.

Gentlemen,

PERMIT me to inscribe the following pages to you, as a small testimony of the respect which I bear to your professional eminence, as well as of the sense which I entertain of the friendship with which you have hitherto honoured me.

I am,

Gentlemen,

Your sincere Friend,

and humble Servant,

JOHN BURNS.

GLASGOW, *George's Street*, July 22, 1799.

PREFACE.

AFTER the Anatomical Description which the late Dr. William Hunter has given of the Gravid Uterus, an apology will, doubtless, be required for the present publication.

Dr. Hunter's posthumous work is, without doubt, truly valuable and useful; but it is not so explicit, on some points, as could be wished; and it is entirely deficient in those practical inferences and conclusions which are so essential to the student.

It might indeed be said, that these inferences may be drawn from anatomical data, by the student himself. But it could, with equal truth, be maintained, that every treatise on surgical operations was useless, as the student may draw the necessary knowledge from anatomy and physiology. It is the great excellence and recommendation of any practical rule, to arise evidently from the structure and functions of the human frame; and there can no higher praise be bestowed on it, than to say, that any one might have discovered it by reflection. This may be said of every valuable and important axiom in physick; but how many would remain ignorant of these, if the discovery depended on their own exertions! The student must have some assistance in establishing a system of practice; he must be made acquainted with some principles and conclusions; he must be led a certain length

ere he can venture to go forward himself into the ways of reasoning and deduction.

Anatomy deserves to be studied as an object of curiosity, and as the best subject which can enlarge and exalt our views of nature. But it is only useful to the surgical practitioner in two points of view; first, as the foundation of physiological knowledge; and, second, as the guide and director of practice, in every case where operations are required. Unless, then, we apply the study of anatomy to practice, or, in other words, make it appear, that every surgical rule and direction is to be deduced from the structure and action of parts, anatomical investigations are useless to the surgeon.

It is from these considerations chiefly

that the following observations are offered to the publick.

For many ages, the art of midwifery was founded on false and mistaken doctrines. Even at present, there are too many who attempt to practise it without any fixed and certain principles, proceeding upon a confused jumble of directions, unconnected with each other, and arising from no sure and evident source. But it will not be difficult to show, that this profession is founded upon as firm a basis as any other department of the healing art; and that, if the student be well acquainted with the structure and action of the parts concerned in parturition, he requires no other direction in the practice of midwifery.

It is not however my intention, when I make this assertion, to encourage the

student in disregarding the different valuable works which have been written on this art. Far be it from me to wish this. What are all these works but commentaries on anatomical points? Are they not extensions and illustrations of principles derived from the sure source of anatomy? And who can deny the utility and necessity of studying these? Experience daily testifies, that, from the same data, learned men draw very different conclusions, and teach opposite practices. This proceeds from the imperfection of our knowledge; from the difficulty of ascertaining the truth; and from our propensity to think differently from others. On these accounts, practitioners do not agree in their theories, and consequently differ in their practices; and it is only by careful study, and much reading, that the student can become acquainted with their various arguments,

and judge of the comparative merit of their proposals.

The study, then, of any of the departments of the healing art, will require our greatest attention, exerted for the longest lifetime. Whoever aspires at eminence and respectability, must, by unremitting application, and diligent study, purchase that honour which he is solicitous to obtain. I know, that it is an opinion with many, that success in the medical world depends more upon interest than abilities. But I shall venture to affirm, that he who trusts to this maxim, and neglects the means of improvement, shall find himself most miserably mistaken. No man will trust his own life, or the safety of those whom he holds dear, to any man, however powerful his recommendations may be, if he once detects him to be a blockhead. In the trifling and insignificant ailments

to which every one is subject, his ignorance may not be perceived, and years may glide on without any great impeachment of his character. But, sooner or later, difficult and important cases must occur; his treatment of these will not pass without observation; and his real character must be made known. If possessed of many friends, he may, for a time, procure concealment or palliation of his faults; but blunders, frequently repeated, must at last become notorious. If a man of fortune, he may, indeed, still hold up his head, and assume the language of defiance or unconcern; but if his own subsistence, or that of a family, depend upon his employment, what must the consequence be? I indeed pity such a man; and, far from insulting him in the midst of those misfortunes which he has drawn upon himself, I should remain silent; but, whilst the blow may still be

kept off, and whilst useful knowledge may yet be attained by honest labour, silence must be criminal. The opportunity of preventing this unhappy event, still presents itself to every student, to whom the precious years of improvement remain yet unconsumed. I shall surely, then, be excused, if I again insist on the necessity of diligence and perseverance. If the future rank of the student, if even his very subsistence, if the hopes and expectations of parents, who have injured themselves, or the rest of their family, to procure him an education, depend upon his exertions, he surely cannot consider the subject as uninteresting.

Every one must be sensible of the time which it requires to procure practice, and the difficulties which a young man has to surmount. He may live long ere he be known, even by name;

his rise must be very gradual; and one slow step after another must lead him forward. Those who are his elders will not fail to urge their superiority, and point him out as a person devoid of experience and useful knowledge. Let him then rouse himself, and, by diligence, steadiness, and a thorough knowledge of his profession, prove that he is not inferior to those with whom he is to compete. Let him early lay down a fixed resolution to become learned: Let him attend diligently wherever attention is requisite: Let him mark out the road of industry, which others have pursued; let him follow steadily in that path, and, sooner or later, in spite of every opposition, he must succeed. His success depends upon his own inclination. If he desire honour, respect, and independence, he has only to form the resolution, and he shall obtain his wish. In proof of this

promise, I appeal to the history of almost every man of eminence. In France, many of the most distinguished surgeons were, at first, so poor, that they could with difficulty defray the expense of travelling to Paris to learn their art. In Britain, many of the most eminent practitioners have suffered severe hardships, both during their education and after they had begun to practise; and it is surely no small encouragement to the industrious student to recollect, that, of all the celebrated men in physick, not one of them owed his advancement to money and interest alone. A good education, and a mind stored with useful knowledge, is, indeed, the richest patrimony which a father can bestow, or a son inherit.

It may be objected, that, although many have raised themselves by their

own abilities, yet every individual is not to expect the same good fortune. But this is assuredly a mistaken remark. Any man who has a sound judgment and ingenious mind, which he chooses to improve, by every mean in his power, may reasonably aspire to honour in the profession, and hope to rival the greatest men, provided that he fixes upon such a local situation as shall not inevitably prevent his advancement, and that dissipation, or a propensity to low vices, do not arise as a barrier.

I HAVE said, that every man may acquire honour and reputation, if he chooses; but it is very far from my intention, to represent the task as an easy one. He who trifles away his time, and who does not consider every hour as misspent which he does not employ in study; he who can stoop to examine a thing by

halves, and who tries every expedient to satisfy his own mind, when he has only acquired a partial knowledge of his subject never can, and never will succeed. He who resolves to be eminent, must first view the character of an eminent man; he must proceed step by step, studying one point after another, until he brings himself to a level with him; let him then try to get above him, if he can. Let him look over all the divisions and subdivisions of his study; let him inquire wherein he is deficient; and whenever he finds a subject on which he is either ignorant or confused in his ideas, let him stop there, and examine it well, before he proceed farther.

It may still, perhaps, be urged, that we find many ignorant men enjoying good business; but are not these men employed because better have not made

themselves known in their vicinity. Is it reasonable to maintain, that, because one blockhead succeeds, another shall also succeed, and the wise man shall fail? It is indeed true, that the generality of mankind are very incompetent judges of medical abilities, and therefore may, from accidental circumstances, raise a fool to some degree of honour; but, notwithstanding this elevation, the fool still remains known only in the little sphere in which he moves, whilst the name of the learned spreads to distant lands. Even this success of the ignorant man must be only temporary. Some one, better qualified than himself, may come and pluck off his false laurels. Some unfortunate case, or some dishonest trick, sooner or later, must unmask his character, and pitch him down to his proper station.

But I shall say no more on the injury

which the student, by his negligence, shall sustain in his character. I shall insist on a more important point, the life and safety of his patient, when he comes to practise. Need I remind him of those dangerous accidents which attend pregnancy and labour? Need I do more than mention those dreadful hemorrhages, which, from their impetuosity, are justly called floodings? Some of these may be stopped by easy means; but others require bolder operations, or increase, in proportion as they continue, ending only with the life of the patient. Can any man, laying the most distant claim to humanity or honour, be easy when he is ignorant of these points? Can any one, not well acquainted with his profession, pretend to thrust his hand and arm into the uterus, and procure artificial delivery? Will he presume to say, upon his own judgment, when it is necessary or safe, and when it

is not? Should he stop to deliberate, if the reason of such a man can be called deliberation, may not the woman die before his eyes, and without assistance? Can he, without uneasiness, attend the more lingering illness, produced by the fruitless efforts of the uterus to push the child through an ill-formed pelvis? Will he dare, in any one instance, to determine, upon his own authority, when the head should be opened and the crotchet employed? Must the child be wantonly sacrificed, because he, in his ignorance, believes it to be requisite? or, must the woman perish, because he foolishly hopes that assistance is still unnecessary? Must both parent and child become victims to his awkwardness? It is a very poor excuse for these crimes, to say, that he had no malice in his heart. The laws of his country will indeed acquit him; but his own conscience must tell him that he is

a murderer. It is only a small alleviation of his guilt, to say, that he did the best he could. It was unwarrantable and criminal to undertake the practice of a profession for which he was not qualified.

It will surely be unnecessary for me to point out the reverse of this character, or to mention the happiness which the true surgeon derives from his knowledge. By the operation of a single moment, he restores life to the dying. In the midst of every danger, he is courageous, because he knows his own powers and resources. His life is spent with honour to himself, and advantage to others; and his departure is beheld with sincere grief, by those who had the happiness of being connected with him.

These remarks may, by some, be

thought unconnected with the subject of the following pages. But, if I am not much mistaken, the anatomy and physiology of the Gravid Uterus is the basis of all obstetric knowledge. Surely, then, these remarks cannot be improperly placed before the elements of midwifery.

I AT one time intended to have given a regular set of plates along with the description; but, when I considered that this subject might be easier understood without sketches than perhaps any other part of anatomy, and that Dr. Hunter had published a very elegant and accurate system of engravings, I gave up the design.

THE

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INTRODUCTION.

THE importance of anatomy to the surgeon has been long and universally acknowledged; but the accoucheur has been, by too many, supposed to draw his principles from a less certain source, and to practise a profession which owed less to true science, and more to fortuitous circumstances, than any other department of medicine. But midwifery is

just a branch of surgery ; its operations are the same ; and he who is qualified to practise the one, may practise the other also ; for in both anatomy is the guide of all his steps. He who pretends to exercise either the one or the other, without an accurate knowledge of the structure of the parts concerned, is either foolish or criminal : his operations are conducted without any principle or direction ; and their success is prosperous or adverse, just in proportion to the possibility which the case admits of error.

THERE is nothing either difficult or mysterious in the science of midwifery. In a natural labour, the accoucheur knows that he is only the spectator of the progress of a natural action. But, in every case of diseased labour, in every instance where his interference is requisite, or his presence truly necessary, a know-

ledge of the structure and action of the uterus, and the connexion of the child, is indispensable. I cannot, then, be wrong in maintaining, that the anatomy of the gravid uterus is the very foundation of the art of midwifery; and that he who knows it well, can only fail in his operations from the same irremoveable and unforeseen causes, which so often render the operations of common surgery abortive, although performed by the most expert anatomist. He who is ignorant of this subject, can only practise with impunity in those cases where the assistance of art is useless; and even here he is only safe whilst he remains a mere spectator. He can neither fully foresee those events which the anatomist may prepare for, nor can he know how to remedy the evil when it does occur.

In studying the anatomy of the gravid

uterus, there are two points which demand our attention :—*First*, The changes which the womb itself undergoes ; *Second*, The contents of the uterus. These I shall proceed to examine regularly.

General Observations on the Size, Figure, and Relative Situation, of the Uterus.

When we compare the unimpregnated with the gravid uterus at the full time, we must be astonished at the change which has taken place during gestation, in its magnitude alone.

In the ninth month, the size of the womb is so much increased, that it extends almost to the ensiform cartilage of the sternum; and this augmentation it receives gradually, but not equally, in given times; for it is found to enlarge

much faster in the later than in the early months of pregnancy.

For a considerable time after conception, the uterus receives a very slow and trifling addition to its bulk; and, instead of rising higher up into the belly, it falls, from a cause which will be afterwards mentioned, rather lower down. It is not till towards the end of the third month, that the uterus can be felt rising above the pubis; although, at this period, it generally measures from the mouth to the fundus about five inches, one of which belongs to the cervix. In the fourth month, it reaches a little higher, and measures five inches from the fundus to the beginning of the neck. In the fifth, it has become so much larger, as to render the belly tense, and may be felt, like a ball, extending to a middle point betwixt the pubis and navel, and mea-

sures about six inches from the cervix to the fundus. In other two months, it reaches to the navel, and measures about eight inches. In the eighth month, it ascends still higher, reaching to about half way betwixt the navel and sternum. In the ninth month, it reaches almost to the extremity of that bone, at least in a first pregnancy, when the tightness of the integuments prevents it from hanging so much forward as it afterward does. At this time it generally measures, from top to bottom, ten or twelve inches.

These calculations are not invariably exact, suiting every case, but admit of modifications, depending on the size of the woman, on the number of pregnancies, on the number and size of the fœtuses, and especially on the quantity of water which the membranes contain.

The uterus, when unimpregnated, is of a flat triangular shape; but this, when gravid, it gradually loses, sooner, however, to external appearance than within; its cavity retaining more or less of this shape for two or three months. The figure of the gravid uterus has been compared to an egg or a pear; but, when we consider that every part of the uterus does not change equally in the same period, we shall find that this comparison will only be just in the end of pregnancy, and not at all applicable in the earlier months. In these the upper part or body of the uterus alone distends, whilst the thickened neck remains projecting and unexpanded.

At every period, the uterus is somewhat flattened; its greatest breadth being laterally. This, at first, depends on the natural shape of the uterus not being

completely changed by distension, and afterwards on its being pressed between the spine and abdominal parietes. This pressure of the neighbouring parts, together with the irregular figure of the child, must produce a variation in the shape of the uterus, not only at different periods of gestation, but even at different times of the same day; for, until its muscular fibres contract in labour, the uterus is never tense, but yields in one place, whilst it bulges out in another.

The uterus, whether gravid or unimpregnated, never rises straight up, but is always inclined obliquely, either forward or backward. In the latter state, the top of the uterus lies backward toward the rectum, whilst its mouth is directed forward. But, in pregnancy, the situation is reversed; for then the mouth of the uterus is directed backward, whilst the

fundus lies forward. This uniformly happens in pregnancy; but the change does not take place until the uterus begins to rise out of the pelvis. This obliquity, however, exists in a greater degree in those who have borne many children; for in them the integuments are loose, and the linea alba yielding, from former distensions, by which the uterus is allowed to project more forward than in a first pregnancy.

From this it appears, that the intestines can never be before the uterus, but must lie behind it, and all around its sides;* whereas, had the uterus mounted up in the same direction which it assumes when unimpregnated, the intestines must have been before it, and the

* By examining the abdomen of the living woman, we can feel the uterus in the middle; and, by patting with the finger around it, we may hear a hollow sound, from the air which the colon and intestines contain.

great vessels would have been pressed betwixt the fundus uteri, and the spine. This would have been a very dangerous, if not a fatal, circumstance ; but it never can happen, as is evident from the anatomy of the mesentery, which is a fixed point behind, tying the intestines to the back-bone, and from the direction of the axis of the pelvis, conjoined with the weight and elongation of the uterus when gravid. These causes must always make the uterus fall forward.

THREE consequences result from this obliquity. First, the uterus makes a more acute angle than formerly with the vagina, and its axis becomes nearly* the same

* I have said *nearly*; because a certain degree of obliquity generally exists; the os uteri being directed to an intermediate point betwixt the axis of the pelvis and the projection of the sacrum. But when labour commences, and the uterus descends, its mouth comes pretty nearly, if not exactly, into the axis of the pelvis.

with that of the pelvis, by which it can more easily force the head of the child through the superior aperture.

Had the uterus remained in the same direction as when unimpregnated (which is impossible) a line drawn through its axis would, if produced, have struck on the lower part of the symphysis pubis. Had it again risen straight up, the line would have passed only at a little distance from the pubis. The first effect of labour is, to press the head of the child against the os uteri, and thus dilate it, which would have happened with difficulty, in this supposed state of things; because, as the os uteri is always in the axis of the uterus, the vicinity of the bone to this point would have taken off part of the force, and, by impeding the dilatation of the mouth of the womb, have rendered labour tedious.

Even the projection forward, or anterior obliquity, as it is called, has been supposed, and justly, to render labour difficult, if it exceeded the due degree. The same consequences will follow from this obliquity, if to a very great degree, which would result from the former supposititious situation; only the sacrum, instead of the symphysis pubis, will be the impediment. But this deviation does not commonly exist to such an extent as materially to affect labour, or to require any manual assistance. It still more rarely proceeds to such a degree, as to produce those very serious consequences which were once very currently attributed to it. By a very great obliquity, it was imagined, that the labour would not only be rendered very difficult and tedious, but also that the child would be killed, by having its head pressed against the sacrum. To remedy this, it was deemed,

at all times, requisite, not only to press back the fundus, and elevate the breech, but also, with the finger, to pull forward the os uteri. It was even said, that the obliquity might be such as to prevent the delivery of the child by any labour, however long. The os uteri being very far back, and high up, it was imagined, that the expulsive force of the uterus would be directed against its lower and anterior portion, which was in the axis of the pelvis; and that thus the head of the child would be protruded, covered with the uterus.* This may be the case; but it may also occur, in a very wide pelvis, without any obliquity; the uterus being thus allowed to prolapse, the head descending before the os uteri is dilated.

* In such cases, without careful examination, it might at first be suspected, that the os uteri had grown together, or was entirely wanting; instances of which authors have not been unwilling to record.

Too great obliquity of the uterus, and the consequent deviation of its mouth from the axis of the pelvis, or the most advantageous situation, will, it must be admitted, protract labour; but, in almost every instance, a change of posture, or elevation of the pelvis, will be sufficient to remove it. Difficult labour, however, from this cause, is very rarely met with by practitioners, now that they have ceased to seek for it.

What has been said on this subject will also apply to the lateral obliquity, or those cases in which the uterus is turned too much on one side.

The second consequence of this obliquity is, that a pressure is made on the bladder, producing incontinence of urine, which is only to be relieved by a recumbent posture.

In the first months, a retention of urine is likewise sometimes produced by the pressure of the uterus against the cervix of the bladder. This, when urgent, may be relieved by removing the pressure of the uterus with the finger, or by introducing the catheter: But, in general, the disease disappears soon, without requiring any assistance.

The third consequence is, that the pressure of the uterus is taken much more and much sooner off the rectum, than it otherwise would have been. If it had continued, for some time, in its natural position, the intestine must have been much compressed: But, to avoid this, and the obstinate costiveness which it would have induced, the uterus, owing to the inclination of the pelvis to the horizon, generally projects, when-

ever its upper part begins to distend and grow heavy.

Besides this deviation of the uterus, there is another, which takes place in the earlier months, and which demands our serious attention, from the consequences which it sometimes produces: I mean the retroversion of the uterus.

This is a disease, which, in many instances, depends upon the connexion of the uterus with the bladder, which is so intimate, by means of the peritoneum and cellular substance, that whenever the bladder rises by distension, the uterus must rise also. Now, as the bladder is globular, and the point of adhesion between the two organs is only at the inferior part, it follows, that the uterus must go off, as a tangent, from the globe of the bladder, its fundus being thrown

farther back, at the same time that its orifice is carried higher up. This happens in every case of retention of urine. It is evident, that if, during this position, pressure be made from above upon the fundus uteri by the intestines, or if the fundus contains any thing which makes it heavy, it must be pushed lower down, by which the uterus will come either to lie horizontally across the pelvis, or may be turned completely upside down.

This does not often happen to the unimpregnated uterus; because there is in that state seldom any sufficient gravitating cause applied to the fundus: But, in gestation, there is a period in which the fundus becomes sufficiently heavy from the ovum which it contains, and yet is not so much distended as to prevent its being turned down into the pelvis. This period is about the third or fourth

month, often before it, but never after it.

Besides this cause, which produces frequently a sudden and immediate retroversion of the uterus, this disease may likewise be produced by the uterus remaining too long in that situation which is natural to it when unimpregnated, namely, with its fundus inclined backward. This may depend on various causes; such as too great width of the pelvis, or the pressure of the ilium, full of feces, on the fore part of the uterus. In this case, the weight of the fundus must gradually produce a retroversion, and we will be sensible of its progress from day to day; whereas the other takes place suddenly.

In this disease, by introducing the finger into the vagina, we ascertain that

the os uteri is raised much higher, and thrown more forward, so that sometimes it cannot be felt. By the same means, or by the finger in ano, we discover a hard tumour, formed by the fundus uteri, pretty low down, between the vagina and rectum. These are the distinguishing marks of the disease ; and we are led to suspect its presence by the following symptoms :—There is a sense of fulness and weight at the fundament, tension in the groins, and an inability to void either urine or feces, owing to the pressure on the neck of the bladder and the rectum. These conditions of the bladder and rectum, and the retroversion of the uterus, act reciprocally, as cause and effect ; for the continuance of the distension of the bladder, and the descent of the feces from the part of the intestine above the obstruction, must elevate still more the os uteri, and depress, to a still

greater degree, the fundus. The retroversion, on the other hand, increases the affection of the bladder and rectum, from which the principal danger of the disease arises.

The cure consists in emptying the intestine by clysters, and removing the distension of the bladder by the catheter, whilst we attempt to push up the fundus with the finger. But our great object is first to procure the evacuation of the urine, after which the rest is more easily accomplished: Or, if the reduction be at that time impossible, it may be performed afterwards, or may gradually take place of itself, provided that we prevent the bladder from becoming again distended, and the rectum from being filled above with feces. In urgent cases, when suppression of urine threatened a fatal issue, it has been proposed, other

means failing, to lessen the bulk of the uterus by tapping. Nor can there be a doubt of the propriety of preferring this, even supposing abortion uniformly to follow it, to the greater evil which results from continued suppression of urine.

In some cases, the orifice does not rise up, but the fundus turns down, doubling on its neck, which bends. This more frequently happens after delivery, before the parts have assumed their proper size and firmness. It has received the name of retroflection; but its treatment is the same.

At other times, though very rarely, the fundus turns forward and downward, between the cervix uteri and bladder, whilst its mouth is felt upward and backward. It is named anteversion; and,

in this also, the treatment and symptoms are similar to the retroversion.

After these remarks, it will surely be unnecessary to insist upon the impropriety of pregnant women either retaining their urine for a long time, or permitting themselves to remain costive.

These observations being made upon the size, figure and relative situation of the uterus, it will next be proper to take notice of the successive expansion of its different parts, and particularly of the changes which take place in the cervix and os uteri.

Of the Changes effected, during Gestation, upon the Fundus, Cervix, and Os Uteri.

Immediately after the descent of the ovum, and perhaps some time before it,

the uterus begins to enlarge at its upper part, or fundus. By what cause this dilatation is effected, it is difficult to say; but it is evident, that it is not from the distension of the ovum;* because this does not appear to be possessed of strength or force sufficient to effect the purpose. Even if it were, it could only distend the sides of the uterus, but could not prevent them from growing thinner. We must, therefore, refer it to an action of the uterus itself, similar to that which produces and regulates the increase of other parts of the body at certain periods.†

* This is rendered certain, by our finding the uterus enlarged, when the ovum is contained in the ovarium or Fallopian tube.

† The increase or distension of the uterus, in the early months, may be ascertained, by introducing the finger into the rectum, at the same time that we examine the state of that part which can be felt per vaginam: afterwards, we estimate it by pressure on the abdomen.

It is somewhat singular, that the posterior face or side of the uterus distends more than the anterior one, as we ascertain by examining the situation of the orifices of the Fallopian tubes.* The greater distention of the posterior part of the uterus, will evidently prevent it from pressing so much on the bladder as it otherwise would do, when it is contained in the pelvis; for, by this mode of distension, the most protuberant part of the uterus will correspond to the sacrum.

* From particular circumstances, the uterus may sometimes expand in a very irregular and uncommon manner. Dr. Hunter mentions a case which occurred in the practice of the late Dr. M'Kenzie, where the uterus stretched out into two distinct bags or cavities, in each of which a child was lodged. Sometimes the unimpregnated uterus expands out at the entrance of each tube, like the cornua of the womb of the quadruped. This might have been the original structure in Dr. M'Kenzie's patient.

When the fundus begins to increase, it not only grows heavier, but also presents a greater surface for pressure to the intestines above: It therefore will naturally descend lower down in the pelvis, and thus project farther into the vagina. In this situation the uterus will remain until it becomes so much distended, as to raise itself up by pressing against the sides of the pelvis.* By introducing the finger into the vagina at this period, we can feel the os uteri prolapsing farther than formerly; and this is considered as one of the most early marks of pregnancy, existing before the uterus can be felt by the hand above the pubis, and consequently before it has swelled the abdomen. The belly is indeed tumid before this happens; but

* From this circumstance of the uterus falling down lower into the pelvis, it must be a longer time of stretching above the symphysis, than if it had remained at its original height.

the swelling is chiefly occasioned by the inflation of the intestines.

Although the uterus, about the third month, has enlarged so much, as, notwithstanding its prolapsus, to be felt rising above the pubis, it yet is not this stretching which accoucheurs allude to, when they say the uterus now begins to ascend. By this they understand the elevation of the os uteri, first to its original height and afterwards beyond it, which takes place whenever the body distends to a certain degree: Because, in proportion as the body of the uterus enlarges, and becomes too broad to be contained in the cavity of the pelvis, it must raise itself up, the brim being a fixed point which cannot yield. The whole of the uterus, therefore, mounts up, and the vagina becomes elongated.*

* This elongation is also increased by the obliquity of the uterus; for the falling forward of the upper part necessarily pulls up the lower part, or os uteri.

Until this ascent of the uterus, the fundus and body form the whole of the cavity; but now the cervix begins also to be stretched out; so that, by the end of the fourth month of pregnancy, one quarter of its length has become distended, and contributes to augment the uterine cavity; the other three fourths, which remain projecting, become considerably softer, rather thicker, and more spongy. By introducing the finger into the vagina, at the same time that we press on the lower part of the abdomen, to keep the uterus from rising up, we may feel the expanded body of the womb; and, by making a kind of waving or circumgyration with the finger, we can now make it exhibit a species of rolling or circulatory motion. If the uterus be kept steady, we may also feel an obscure fluctuation, from the water which it contains.

In another month, one half of the cervix is distended, and the rest is still more thickened, or the circumference of the projecting part greater:* The uterus has also risen farther up; consequently the vagina is more elongated. In the sixth month, the neck is still more stretched; and, in the seventh, it is dif-

* Although the cervix distends in this ratio, yet it does not expand abruptly to form the uterine globe. The dilatation takes place gradually; on which account the lower part of the uterus has, about the sixth month, the appearance of an inverted truncated cone. This tubular or conical part is filled with the waters, and contains no part of the child. The head cannot, therefore, be felt, until the cervix expands more into the globular figure, which happens towards the end of the seventh month.

When the cervix is in this state, it is pliable, and bends easily. It, therefore, owing to the figure of the bladder co-operating with the nature of the fixture below, and the weight directing the uterus forward above, assumes a slight incurvation. In this way, the bladder is not so much pressed as it otherwise would be, and the os uteri is not thrown backward so soon. This last circumstance may be attended to in examination.

ficult to discover any projection from the body into the vagina, which is still longer. At this time, by pushing the finger higher up, we can distinguish the head of the child pressing on the lower part of the uterus, which we can seldom do before this. In the eighth month the neck is completely effaced, and its orifice is as high as the brim of the pelvis. The ninth month affects the mouth of the uterus chiefly; and therefore the changes in this period must be considered afterwards.

These alterations of the cervix are discovered by introducing the finger into the vagina, and estimating the distance betwixt the os uteri and the body of the uterus, which we feel expanding out like a balloon.

The mouth of the uterus is merely the

termination or extremity of the cervix, and consists of two flat lips or margins, of the same consistence with the rest of the uterus. When the womb is not gravid, these are always open, and will admit the tip of the finger: But, soon after conception, the os uteri becomes closely shut up, except at the very margins, at the same time that it gradually becomes softer. In proportion as pregnancy advances, and the cervix stretches, the tubercles of its extremity, or its mouth, shorten, until they totally disappear; so that when the neck is fully distended, there can no longer be felt the thick margins of the os uteri. It is now quite flat, very thin, and irregular in its aperture; for, as the lips never unite closely at their very extremity or margin, it follows, that a small cavity (the bottom of which is the inner surface of the undistended portion of the cervix) must, in all the

months, be perceived. From the same cause, there must always, in the end of pregnancy, be a small hole, from the complete developement of the parts, through which we might touch the membranes, were it not filled up with mucus.

The lower part of the cervix, in the course of gestation, and the inner border of this opening, in the ninth month, for about an inch all round, is full of small cavities or glandular follicles, which secrete a thick, viscid mucus. This extends from one side to another, and fills up the mouth of the uterus very perfectly, being thus interposed as a guard betwixt the membranes and any foreign bodies. By maceration, this may be extracted entire, when a mould of the lacunæ will be obtained by floating it in spirits saturated with fine sugar. Before labour,

it separates and comes away, after which the glands pour out a thinner fluid, which lubricates the parts. But the outside of the orifice, and the upper part of the vagina, contribute still more to the production of this secretion. Immediately before labour, or after the first pains, the discharge is tinged with blood, which proceeds from a trifling separation of part of the decidua.

The situation and position of the os uteri during gestation, may be learnt from what has been said concerning the cervix, of which it is only the extremity. It may, however, be proper to add, that, at the end of the ninth month, and before the commencement of that more perfect action called labour, the fundus uteri begins to contract a little, and very gradually, which forces the child more completely down to the bottom of the

uterus, and makes it press more on its mouth. In consequence of this, the uterus seems to subside, and does not reach so high up in the abdomen, whilst the mouth descends a little. This descent is, however, very trifling, until the stronger contraction, called labour, begins. When, therefore, the os uteri remains high up, whatever pain or uneasiness the woman may feel, delivery is not at hand, nor is she in real labour, unless the os uteri descends during every increase of pain.

These changes of the neck and mouth will, perhaps, be better understood, if we attend to the ultimate object of the uterine action, which is, to expel the fœtus. The extension of the uterus, and the increase of its cavity, is intended to contain and preserve the child, and its different appendages ; but it has also a refer-

ence to labour, which it would be very improper to lose sight of. The fundus first distends, affording a lodgement to the fœtus in the earlier months, and might undoubtedly have yielded still more, so as to contain the full grown child, without any assistance from the distension of the cervix, had a lodgement been all which was requisite. But, in order to assist expulsion, or even to render it practicable it is necessary that the cervix should yield; and it is more upon this account, than for the purpose of containing the child, that this part of the uterus distends. The final intention of all the changes of the cervix and mouth of the womb, is, to render the uterus one cavity with the vagina.

The uterus and vagina may be compared to a sand-glass, the middle or contraction of which is the cervix and os

uteri. Before, then, that a body can pass from the one end to the other, the contracted part must yield, and the whole become only one canal. The chief business of the latter months of gestation is, to obliterate or distend the neck, whilst the primary object of labour is, to open the mouth, and destroy completely the division betwixt the uterus and vagina.* The first of these changes takes place gradually during pregnancy, the second rapidly during labour; and all the steps

* I shall suppose the uterus and vagina to be one continued substance, but of different shapes; that the vagina is a cylinder, and the uterus an ellipse; and that, at the junction of the two, the part is contracted so as to form a valve: lastly, that the end of the ellipse projects, for a little way, within the cylinder. If we wished to destroy this contraction, we would first pull up the projecting part of the ellipse from the cylinder, and then dilate the purse or mouth; we should thus form a cone, the base of which would represent the fundus uteri, and the apex the orifice of the vagina.

are simple and regular in their gradation.

Sometimes, though rarely, the os uteri has its intimate structure changed, becoming tendinous or semi-cartilaginous. In this case, the efforts of the uterus are fruitless, and delivery cannot be accomplished without a division of the diseased part. In this case, no dilatation, or a very trifling dilatation, takes place; the throes are very severe, until their continuance exhausts the action of the uterus; the membranes do not protrude, but often the waters ooze out; the uterus descends, and approaches nearer to the vulva, by which we can better feel the hard structure, and may even at last almost see it. This may be remedied, by making an incision through the os uteri, on each side, which is attended with little pain, and scarcely

any hemorrhage, the part being, in this state, very destitute of large vessels.

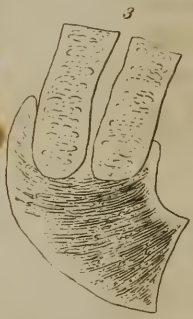
From these observations, two practical conclusions may be made:

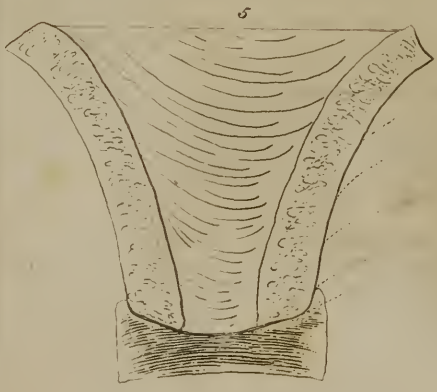
First, When the cervix and os uteri are higher or lower than natural, by which I mean, than when unimpregnated; when the circumference of the cervix, or projecting portion, is increased, and its length lessened; and when the body of the uterus can be felt expanding, like a balloon; when the os uteri is softer, and the finger cannot be passed into it as formerly; and when the sympathetic signs of pregnancy are present, we may pronounce the woman to be with child, and judge of the period by the facts already stated. We ought, however, not to be too confident for the first eight or ten weeks; because then the cervix has

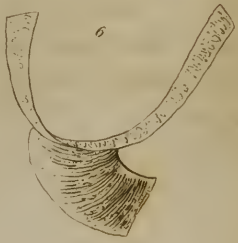
not begun to distend, and the signs are more fallacious than afterwards.

Second, When the os uteri has no longer any distinct lips, but becomes very thin, we may consider labour as not many days distant; when the fundus subsides, and the uterus begins to contract a little round the child, which is always attended with more or less pain, and when the mucus begins to flow, we may consider labour as almost begun; when the pain increases, and the mucus becomes tinged with blood, and when the orifice begins to open and descend farther down,* we may consider the woman

* When we introduce the finger at the commencement of labour, we strike against the anterior and lower rounded portion of the uterus, which forms a segment of a circle, reaching from the bladder or pubis to the rectum or sacrum. At the back part of this we find the os uteri, more or less open, tense during pain, but thick, soft, and







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to be in actual labour, and are to judge of its progress by the descent of the orifice, by the degree of its dilatation, and the quantity of the child's head which is contained in the pelvis.*

as if chopt, during the intervals. The plane of the orifice, at this time, is nearly parallel to that of the superior aperture of the pelvis, and a little farther dilatation brings it exactly into the axis of that aperture. When the child's head passes the rim of the pelvis, and turns forward, it then gets into the vagina, and thus into the axis of the inferior aperture.

* EXPLANATION *of the* ANNEXED PLATE.

These figures represent the different changes which take place during gestation, in the appearance and situation of the cervix and os uteri.

Fig. 1 Is a lateral section of the uterus and vagina, in the unimpregnated state, intended to show the position of the uterus relative to the vagina, and the appearance and projection of the os uteri.

Fig. 2 Shows the first change which impregnation produces. The uterus has fallen lower down, and projects more forward. This is the appearance in the second month.

Of the Muscular Fibres of the Uterus.

CONCERNING the muscular structure of the uterus, there have been many disputes; and every anatomist has thought that he has discovered some new course of the fibres, which he has described and painted, as if it were really a matter of importance.

Fig 3. In the fourth month, the uterus has risen higher, and projects more forward.

Fig. 4 Is a lateral section of the uterus, in the sixth month. The sides of the cervix are pressed nearer each other by the rectum and bladder, and form a slight curve, corresponding to the globe of the bladder.

Fig. 5 Is a front view of the same uterus, and shows the cervix expanding out in a trumpet-like form. The cervix or os uteri projects for only a very little way into the vagina.

Fig. 6 Shows the complete distension of the cervix at the full time, and the direction of the os uteri backward, before the uterus has descended in labour.

THE old anatomists readily allowed the uterus to be muscular; because, in opening cats, they found it contract and move like one of the intestines. But, in the human race, this contractibility does not manifest itself until the period of parturition.

WITH regard to the course of the strata, they first settled, in their own minds, which would best answer for expulsion, and then painted it. Thus Vesalius describes three strata of fibres, the external one transverse, the internal one perpendicular, and the middle one oblique. Malpighi describes them as forming a kind of net work; whilst Ruysh maintains, that they appear at the fundus, in concentric planes, forming an orbicular muscle. Others said, that they were bent to various arches. Dr. Hun-

ter* paints them as transverse in the body of the uterus, but, at the fundus, describing concentric circles around each orifice of the Fallopian tubes. There are, therefore, according to him, two orbicular muscles, and a transverse one.

These contradictions of anatomists serve to show, what may readily be seen by examining the uterus, that the fibres are not very regular and distinct in their course, but exhibit confusion, rather than any well marked figure.

The increase of the uterus is by no means owing to the addition of muscular fibres; for it is far from being proved, that there are more of these in the ninth than in the first month. Their size, however, is larger; but this does not

* Vide Hunter's Plates, plate xiv. fig. 1.

contribute so much to the increase as the enlargement of the blood vessels, and perhaps the deposition of cellular substance. This gives it a very spongy texture, and makes it so ductile, that a very small aperture may be greatly dilated, without tearing.

It was, at one time, believed, that as the uterus extended, it also grew thinner. Next anatomists went into the opposite extreme, and declared it to be thicker; whilst a third set maintained it to be always the same. But dissection proves to us, that, although the whole uterus does not grow thinner in proportion to its increase, it yet does, at the full time, become thinner near the mouth, whilst the fundus continues the same, or perhaps grows a little thicker, at least where the placenta is attached. This statement, however, is only to be understood

as correct, when the uterus is not injected; for, when the vessels are well filled, it becomes greatly thicker.

The course of the muscular fibres is of very little consequence to the accoucheur; but it is of the utmost importance that he should be well acquainted with their action. Naturally, the uterus remains torpid, and just like a membraneous bag, until the end of the ninth month. At this time, it begins to act, contracting a little in every point, but especially at the fundus. By degrees, this contraction increases, and, along with it, the pain; but the action is very imperfect, and does not tend immediately to expulsion; for the os uteri contracts at the same time with the rest of the uterus, whilst it dilates in true labour. This we know by introducing

the finger. Very soon, however, a more perfect contraction takes place in the fundus and body, whilst the os uteri gradually relaxes and dilates.* The membranes, filled with the waters, protrude slowly, which prevents the head

* During a pain, we can introduce the finger easily within the os uteri, unless the presenting part of the child prevent us. But, when we attempt to introduce the hand into the uterus, in order to turn, in the intervals betwixt the pains, we find some difficulty, from the contraction of the os uteri. But, whenever the paroxysm begins, we can easily introduce the hand beyond it. When the hand is fairly in the uterus, we frequently think, that, during a pain, we feel the os uteri contract round the arm; but it is a mistake. It is only the lower part of the uterus or its distended cervix, which is thus contracting more than the rest, with a view to make the greater impression on the head, and push it farther down. The fundus, I believe, contracts most at first, to push the child farther down; but, afterwards, the lower part seems to act rather more than the upper, in order to produce a greater effect on the head.

from engaging immediately in the pelvis. It is therefore, at this time, higher up than after the membranes burst, and cannot be felt distinctly, even during the absence of pain.*

* Until the membranes burst, there is seldom any absolute necessity for examination ; because the presentation may be better ascertained immediately after the discharge, and may then be easily enough changed, if it be requisite ; but if the accoucheur be inclined to examine, he ought to do it during the interval of pain, when the membranes are not tense, otherwise he will rupture them. Even after they burst, all examination, in order to ascertain the presentation, will be best made during the relaxation of the uterus, unless the part be so far out of our reach, as to require the action of the uterus to push it down to our finger. But it is always necessary to examine during a pain, when we wish to determine how far the child has advanced into the pelvis, or to what degree the os uteri has dilated.

If we are longer of feeling the presentation, than we ought to be in a natural labour, we may suspect that either the breech, or some other part than the head, presents.

The membranes not only assist labour when entire, by making the uterus contract round a larger body, and by aiding the dilatation of the os uteri, by their protrusion, but also by their preventing the head of the child from engaging too soon in the pelvis. Were the head to descend too early, it might fix the lower part of the uterus betwixt itself and the sides of the pelvis, and thus retard the effect which the contraction of the fundus and body should have on the os uteri. In this case, the portion so fixed would have become the part acted on, instead of the os uteri. Soon after labour begins, the membranes burst, and discharge the waters. In consequence of this, the bulk of the uterus is suddenly diminished, and its action is suspended for a little, but presently returns stronger than ever; the os uteri yields more quickly, and

approaches nearer to the vulva;* the head descends lower into the pelvis, and finally is expelled, the rest of the child speedily following it; the placenta is next, after a short interval, delivered, and the empty uterus slowly contracts, in a few weeks, to its original size, shape, and firmness: This return is attended with a discharge of fluid, called lochia, at first copious and bloody, but afterwards gradually growing paler, and less in quantity, until it disappears entirely.

Here it may be proper to make some observations:

First, After labour begins, the uterus is always firm, and in a state of con-

* This descent of the uterus is of much importance, because the vagina is thus greatly shortened, and, therefore, can more readily admit of dilatation.

traction. By introducing the hand, we feel it smooth and even, and exactly like the diaphragm, rendered tense. When we wish to turn the child, therefore, we will find it of advantage to run the hand up along the surface of the uterus, which, from its smoothness and tension, will make our progress much easier, than if we bored up through the extremities of the child, or along its trunk.

Second, This permanent action of the uterus makes a constant pressure on the child, and keeps it in its situation. It embraces the hand firmly, when we have it introduced in the intervals of the pain; but the force it exerts is trifling, when compared to the action of the uterus during its contracting paroxysm or pain. No one who has not tried to turn

a child, can believe how great the pressure is, or how often the hand is cramped by it.

THIRD, When the contracting action of the uterus is feeble, the labour is very slow; but unless flooding, or some other dangerous symptom, supervene, we ought not to interfere with our hand, as the power of the uterus will, in the end, be sufficient to perform its office. We know this to be the cause of a tedious labour, by the little effect produced upon the os uteri, by the slightness of the pains, and the long intervals betwixt them, and by the absence of other retarding causes, such as a narrow pelvis.

IN this case, if the woman be fatigued, and not likely to sleep naturally, we may

administer an opiate, which, by suspending, for a time, the action of the uterus, will quicken it afterwards; for every temporary cessation, in general, produces a subsequent increase of action.

Fourth, The uterus, like other muscles, is subject to irregular or spasmodic actions of its fibres, either before or during labour. Not unfrequently, these occur in the end of the ninth month, and, by the pain which attends them, alarm the woman, or make her believe that labour has begun, although it be still distant. This is distinguished by the continuance of the pain, or its irregular return, at very short intervals; by its confinement to a particular part of the uterus, or shifting about; and by its producing no effect upon the os uteri. This affection is to be removed by warm

fomentations, anodyne draughts, or clysters with laudanum.*

Fifth, If the contraction of the uterus be in due degree, but unable to force down the head, owing to the smallness of the pelvis, we must increase the force, by fixing the forceps, or the lever, on the head, and thus extract what the unassisted powers of the uterus could not expel. If this be impossible, from the very contracted size of the pelvis, we must diminish the bulk of the head with a pen-knife, or a pair of scissars, and then extract either with the forceps or crotchet. The same direction holds good, when a feeble action of the uterus

* After the child is delivered, these spasms of the uterus are sometimes productive of considerable pain, and occasionally prevent the expulsion of the placenta, until they are slowly overcome by the introduction of the hand.

is conjoined with the deformity of the pelvis. Although this be an established rule, and the practitioner be fully warranted to employ instruments, whenever the diameter of the pelvis is too small to permit of natural delivery; yet it is too certain, that not a few believe their application to be necessary, when it really is not. Were this not the case, why should we so frequently hear the man of discernment praised, for delivering a woman, without instruments, of a living child, who had often been formerly delivered by others of dead children, by the forceps or crotchet? No one, who has not seen it, could believe how much the bones of the cranium will overlap each other, in a tedious labour By this mean, the power of the uterus is often sufficient to expel a child through a very small pelvis. This needless application of instruments may be excused in some, upon the sup-

position of ignorance: whilst others, from reasonings and principles, may believe it to be proper. But there are others sufficiently unprincipled to have recourse to the forceps or lever, whenever the woman is not delivered within a certain number of hours after they are called. This is a practice for which there can be no apology offered, and for which, I might add, no professional censure can be admitted as an adequate punishment; because the application of instruments, in most hands, and in every hand at certain times, is attended with pain to the woman, and danger to the child.

Sixth, After the child is delivered, the action of the uterus sometimes ceases, for a considerable time, and the placenta remains longer than it should do. But, if no flooding takes place, this is of little

consequence, as, sooner or later, the presence of the placenta renews the contraction of the uterus, and procures its own expulsion.

Seventh, This atony of the uterus may cause hemorrhage, by allowing the vessels to remain open, the fibres not contracting around them. This may happen either before the placenta comes away, or even many hours after it is delivered; and the torpor of the uterus is sometimes so great, that, when the blood is prevented from getting out, by coagula stopping up the mouth, the uterus has been known to distend, with effused blood, to a very great degree. The same effect may happen, when the mouth contracts, but the fundus and body of the uterus remains torpid. This occasionally occurs; for one part of the womb may contract more strongly than ano-

ther. This state of the uterus is to be removed, by introducing the hand into its cavity, and thus mechanically exciting its action, whilst we make pressure on it externally When this fails, cold applications, or the introduction of a pledget, or the hand, dipt in vinegar, brandy, or solution of alum, may be useful and allowable.

EIGHTH, When we can feel the uterus through the abdomen, or from the vagina, not yet quite contracted; when the orifice is thick, soft, and readily admits the finger; and when there is a greater secretion than usual from the part, we may pronounce that the woman has been recently delivered; and our judgment will be confirmed, by observing the fulness of the labia, and the state of the breasts.

HAVING taken notice of the natural accession of the action of the uterine fibres, at the full time, it may be proper next to mention, that they are susceptible of action not only at the end of the ninth month, but also during any of the earlier periods. This may be induced in five ways:*

FIRST, By sympathy. The connexion betwixt the uterus and fœtus is so intimate, that a disease of the uterus, or of the membranes, will destroy the child, whilst the death of the child will very commonly prevent the farther increase of the uterus. Whenever the uterus

* It may, by some, be thought improper to mention particularly the methods of inducing abortion; but this is not a book which will likely fall into the hands of any but medical readers, and it is proper that they ought to be apprised of the exciting causes of abortion.

ceases to enlarge, it begins to contract. The one condition regularly succeeds to the other; from whence we may understand, how an affection of the contents of the womb may induce its premature contraction. But, besides this sympathy with its contents, its connexion with other organs may produce contraction of the uterine fibres. Thus, for instance, violent affections of the intestines, induced either by disease, or intentionally by purgatives,* frequently occasion abortion. Emeticks, by their effects on the stomach, and partly by mechanical con-

* Aloes, colocynth, and drastic purges, are too frequently employed for this purpose, by unfortunate and unhappy females. But abortion, procured thus, is much more dangerous than that which takes place from some other causes; because the very violent action of the means employed, adds considerably to the injury of the system. It is, on this account, a common observation, that abortion, which takes place without the wish of the woman, is much less dangerous than that which she voluntarily induces.

cussion, may produce the same effect. Violent passions, by their influence on the brain, are also causes, acting by sympathy.

Second, By mechanical irritation. Emetics and purgatives act in this way, as well as by sympathy. Blows and falls are likewise to be referred to this head, although they may sometimes operate solely by producing a separation of the membranes.* Introducing the finger a little way within the os uteri, and irritating the part, by gentle but long continued motion, is, however, one of the

* A separation of the membranes uniformly takes place in abortion. Sometimes, as we see in the effects of falls, &c. it becomes the immediate exciter of the miscarriage, and precedes the contraction of the uterus. At other times, it is only a necessary effect of the contraction or aborting action of the womb. This is exemplified in the abortion induced by purgatives.

best examples of the effects of mechanical irritation.

Third, By suddenly diminishing the volume of the uterus, and thus producing an artificial contraction. By piercing the membranes, either with the finger or a trocar, we let out the waters, and produce a collapse of the uterus. This, in the course of a few hours, though sometimes not until after several days, excites the action of the uterine fibres.*

Fourth, By general affections, or diseases of the system. Any febrile action of the system may occasionally induce abortion; but such as are accompanied with an eruption on the skin, are parti-

* As neither this, nor any of the other causes of abortion, operate, generally speaking, immediately, we cannot be certain, for some days, that blows, diarrhœa, &c. in pregnant women, have done no harm.

cularly apt to affect the uterus. Thus, for instance, a very great proportion of negroes in the West Indies, who take the small pox when pregnant, miscarry; and, I believe, we may likewise say, that most women, who are affected with syphilis to a great degree, or for a long time, abort. Typhus fever, on the contrary, though assuredly a very violent action, more seldom affects pregnancy. In such as have died of this disease during gestation, I have found the uterus and fœtus perfectly sound; and, in those who recovered, I have not often known the pregnancy affected, or the fœtus in the least injured.*

* Infants appear to be much less susceptible of typhus fever than adults; and the fœtus in utero seems to be still less capable of being acted on by the contagion. It is, however, possible for the child to receive this and other diseases before birth. When this happens, they generally, if not uniformly, die, and labour supervenes.

Fifth, The uterus may expand too soon in its different parts, and arrive earlier than the ninth month at the same situation in which we find it naturally at the full time. This depends upon unknown causes, over which we have no controul. It sometimes appears to be induced by previous abortion, which gives this morbid disposition to the womb. Although the uterus seems to arrive at the full distension prematurely, yet the vascular membranes are sometimes found in the same state, both of thickness and distension, as in other cases, at the same period. They have not enlarged or extended in proportion to the expansion of the uterus; and, therefore, the distension of the cervix uteri must be attended with hemorrhage, owing to the separation of the decidua, which necessarily takes place. In this case, I have known a bleeding continue for weeks, until labour

took place, in the seventh month. Our interference or delay must be regulated by the hemorrhage, and its effects on the constitution.

Upon this subject it may not be improper to make some farther observations, of a practical nature :

First, In abortion, by which I mean the expulsion of the child in the early months, the larger that the body to be expelled is, the more powerfully and effectually does the uterus contract. Hence we ought never, in the first three or four months, to pierce the membranes, in hopes of accelerating the expulsion ; for the very reverse happens. The waters run out ; the fœtus, after a continuation of the bleeding, at last escapes ; but the placenta and membranes remain. But, from the diminution of bulk, the uterus

cannot expel them so soon, as if we had not interfered. The disease is, therefore, longer protracted, and more blood is lost, and a greater injury done to the system, than if the woman had been let alone. It is true, that frequently the membranes burst early in abortion, without any assistance; but these cases are by no means so favourable, as those in which this does not take place; and no argument in favour of the practice can be drawn from them. In the later months of pregnancy, however, the case is different; for then the quantity of blood effused is sometimes such, as to make it necessary to produce a diminished size of the uterus and its vessels. At this time, the size of the fœtus keeps up the action of the uterus, after the escape of the waters, and excites its own expulsion.

Second, The less of the cervix that is

distended, the longer is the ovum of being expelled, and the greater is the difficulty of giving manual assistance. At the full time, the only part which remains to be dilated is the os uteri; but earlier, the undistended cervix opposes an additional resistance. Until about the sixth month, when three-fourths of the cervix is distended, it is impossible to dilate the parts with the finger, in order to extract the child; and, luckily, at an earlier period, this is not necessary.

Third, When the pelvis is so small, that a child, at the full time, cannot pass through it alive, it has been proposed to induce premature labour, about the seventh month, when the child was smaller. But this is an operation which is very seldom advised, until, by the experience of a former labour, it has been demonstrated, that the woman could not

be delivered without the crotchet, or lessening the head of the child. When this is ascertained, the practice is most undoubtedly proper, and ought always to be had recourse to; because it is in itself safe with regard to the mother, and gives a chance of life to the child,* who must be inevitably destroyed, if the head be lessened, or the crotchet applied. When we have agreed to perform this operation, we may employ the mechanical irritation of the os uteri. If this be not sufficient, the puncture of the membranes always will produce the effect.

Fourth, The expulsion of the child, in the early months, from whatever cause it takes place, is uniformly attended with a discharge of blood; but,

* The Mareschal Duc de Richlieu was born in the sixth month of pregnancy.

in advanced pregnancy, there is no flooding,* unless the uterine action be excited by such causes as produce a separation of the placenta or membranes; or, in the case already mentioned, where the extension of the uterus and membranes do not correspond.

Fifth, During abortion, pain is a desirable occurrence; because it shows that the uterus is contracting, and promises a more speedy expulsion.

Sixth, After the uterine contraction has once fairly begun, it can seldom, if ever, be stopt. One French author, indeed, relates three cases, where labour

* Every delivery is preceded or attended by a discharge of blood, and this discharge must inevitably be greater in quantity in the sixth or seventh month, than in the ninth, owing to the greater thickness and vascularity of the decidua: But this discharge cannot be called a flooding.

began before the ninth month, and proceeded so far, as to dilate the os uteri to the breadth of half-a-crown. By bleeding, in the first case, in which plethora was the reputed cause of labour; by giving a good diet, in the second, which depended on abstinence; and by administering an injection, in the third, which depended on costiveness, the os uteri closed, and the woman went to her full time. Of the accuracy of these cases, every one will form their own opinion. It may likewise be thought to be an objection to this axiom, that a woman, after being threatened with abortion in the early periods, and losing much blood, yet sometimes retains the child. But there is a great difference betwixt a flow of blood from the uterus, and a contraction of its fibres. In these cases, the uterine action has not commenced; a portion of the decidua has only been detached.

The pathology of the uterine muscular fibres may now be finished, by taking notice of their rupture. The uterus, like every other muscle, may not only be lacerated by external violence, but also may be torn by its own action. As long as the membranes remain entire, the uterus contracts round an even surface, and all its efforts are directed to dilate its mouth. But when the membranes burst, the uterus must then contract round the unequal surface of the child's body, and may be torn over some projecting portion. This, however, is seldom the cause of the rupture. More frequently it proceeds from a narrow pelvis, in which the head of the child gets so jammed, that it intercepts, very completely, a portion of the uterus betwixt it and the projecting or deformed part of the pelvis. Against this portion of the uterus, then, and not against its

mouth, is the contracting force of the uterus directed. In this case, very great pain is felt in the intercepted portion on which the uterus is acting, which increases, until it suddenly is rent, and the child escapes through it into the abdomen; or, in some rare cases, the same pain which tore the uterus, has been able to push the head beyond the projecting part of the pelvis, and delivery has taken place in the natural way.

When, in a tedious labour, the woman complains, during each contraction, of severe pain, referable to a particular spot, suddenly increasing to a violent and excruciating degree, and followed instantly by a discharge of blood, we may suspect this event to have taken place. If to this succeed nausea, vomiting, faintishness, cold sweat, and feeble pulse, we may be still more convinced of it. But

a rupture must have happened, beyond a doubt, if the labour pains cease entirely, and the presenting part of the child recedes or disappears, whilst, by pressure externally, we can feel an irregular body in the cavity of the abdomen.

This is a most alarming and dangerous accident; but the practice is plain and simple. We must immediately introduce the hand, and lay hold of the feet of the child, if they be still in the uterus. If they be not, we must pass the hand through the rupture, and search for them, delivering steadily, but not hurriedly, taking care that none of the intestines follow through the rent. If this cannot be done, we must make an incision through the abdominal coverings, and remove the child, which is indeed a very terrible and dangerous operation,

but not more terrible or more dangerous than the Cæsarean section.

Upon this subject I shall make two additional remarks:

First, In a woman with a narrow pelvis, we ought to be more cautious than ever of rupturing the membranes, and thus allowing the head to engage too soon in the cavity of the pelvis. We ought likewise to attend to the axis of the uterus, which, if too oblique, might make its side be easier caught between the head of the child and the projection of the sacrum.

Second, After the membranes have burst, if the pain continues violent, but the head makes little progress in its descent, especially if more pain be felt in the back, at the projection of the sa-

crum, or in one part of the uterus than in the rest, marking the production of a greater effect of the contraction in that part, we must assist delivery, by turning, if the head can be pushed back, or by the forceps, or even by lessening the head, if it be too high up to admit of the application of safer means. We are fully justified in doing so, when we consider how very dangerous the accident is which we apprehend and mean to prevent.

Before quitting this subject altogether, I may take notice of a very dreadful disease, which affects the fibres in common with the rest of the substance of the uterus; I mean the inflammation of the womb after delivery, or, what is commonly called, the puerperal fever.

This disease generally makes its ap-

pearance soon after delivery, and is marked by shivering, frequent pulse, great thirst, followed by excruciating pain in the lower part of the belly, spreading soon over the whole abdomen, which swells, and becomes very tender. This is uniformly attended with vomiting of bilious and dark coloured matter, and not unfrequently with a dysenteric affection of the bowels. From the first the lochial discharge is suppressed, and the secretion of milk stops.

If the disease be not checked, it very soon ends in gangrene; the pulse sinks, the teeth collect a sordes, singultus supervenes, the pain goes off, and the patient dies in cold sweats and delirium.

Whenever this disease approaches, the lancet must be had recourse to, and the stomach emptied, by drinking an in-

fusion of camomile, with a few grains of ipecacuanha diffused in it. The common saline jalap, sweetened with manna, may then be prescribed, with the addition of small doses of tartar emetic. The belly is likewise to be fomented with flannel cloths, wrung out of warm water, having laudanum sprinkled on them; or, if the pain continues violent, a blister may be applied.

After the more immediate violence of the disease is overcome, opiates, conjoined with antimonials, may be advantageously administered, and the belly kept open, by small doses of calomel, made into pills, with the extract of hyocyamus.*

* I have uniformly employed these pills with success in dysenteric affections, and never knew them once fail, when administered early in the disease.

The diminution of the pain, the cessation of the vomiting, and the abatement of the thirst and frequency of pulse, are favourable signs. When the lochial discharge and secretion of milk return, we may pronounce the woman well.

Of the Ligaments of the Uterus, Fallopian Tubes, and Ovaria.

No one who understands the anatomy of the ligaments of the unimpregnated uterus, will be surprised to find a great change produced in their situation and direction, by pregnancy.

The broad ligament, which is just an extension of the peritoneum from the sides of the uterus, is, in the ninth month, by the increase of that viscus,

spread completely over its surface; and, therefore, were we to search for this ligament, we would be disappointed. Its duplicatures are all separated, and laid smoothly over the uterus. It will, therefore, be evident, that we can no longer find the ovaria and Fallopian tubes floating loose in the pelvis, nor the round ligaments running out at an angle from the fundus uteri to the groin. All these are contained within duplicatures of the peritoneum, or ligamentum latum; and, therefore, when this is spread over the uterus, it follows, that the ovaria, tubes, and round ligaments, cannot now run out loosely from the uterus, but must be laid flat upon its surface, and bound down by the stretched peritoneum.*

* This description applies only to the state of the uterus at the full time. Earlier, we may readily observe the broad ligament flying out, and allowing the ovaria free play.

The Fallopian tubes, then, are to be found running down, clinging to the sides of the uterus, with their fimbriæ spread out upon its surface. These fimbriæ are larger, thicker, and more distinct, than formerly, and the tubes are softer and more vascular. A pretty large probe may be passed along them, until it comes to about an inch and a half, or two inches, from the uterus, where it is stopped by the decidua.

The round ligaments, like the tubes, run down close by the side of the uterus, and are thicker, rounder, and softer, than formerly. They are likewise so vascular, that they seem to consist of nothing but vessels, and may readily be made turgid, by injecting size from the hypogastric arteries. From this great vascularity, and from their terminating in the groin, some have supposed, that their use was

to keep up a free circulation betwixt the external and internal parts. But for this there seems to be no great foundation.

Behind the fimbriæ lie the ovaria, which are not much enlarged, but are more vascular; the vessels running round them, and dipping down into their substance. After each pregnancy, we may perceive, in one or other of them, a yellowish spot, called corpus luteum.

By making a section of the ovarium, in such a direction as to take in the corpus luteum, we find it to be a round body, of a yellowish colour externally, but white in the centre. This centre, in the early months, is hollow, and contains a fluid: It may likewise be easily filled with size, by fixing a pipe in the spermatic artery. On the surface of the corpus luteum, we find a small depression

or pit; but it has never been seen to communicate with the cavity, although it is probable that it does so immediately after conception. The vessels of the ovarium are every where numerous; but they are, at this spot, so plentiful, and, at the same time, so superficial, that, at a distance, we would imagine that the corpus luteum was covered or surrounded by an extravasation.

The ovarium was once supposed to secrete a female semen, and therefore was called the testicle of the woman. This is now disproved; but still there can be little doubt that it deserves to be considered as a gland. Some, perhaps, may cavil, when I say, that it is here that the rudiments of the fœtus are secreted; but the cavil can only be at the use of a word. The male semen is the natural stimulus to this gland, which ex-

cites it to action; but other stimuli will induce an imperfect action in it, similar to that of generation. It is, for instance, a fact, that confused masses, consisting of flesh, bones, and hair, have been found in the ovaria of women, who had all the signs of virginity.

Like other secreting glands, the ovaria may be affected with true scirrhus and cancerous ulceration: But it differs from all the rest, in being subject to a dropsical effusion of water within its substance. The sack or cavity, so formed, has sometimes a smooth surface internally, but oftener it is rough and pointed. In some cases, I have seen it studded over with large projections, making it resemble the gravid uterus of the cow, with its papillæ. This disease is not confined to the human species, but affects birds and quadrupeds also.

It is said, that sometimes the fœtus does not pass from the ovarium into the tube, but is retained in that gland, in which it grows to a certain size. This may sometimes happen, though very seldom, the embryo remaining in the cavity of the corpus luteum; but it never can arrive at any great size in the ovarium. Oftener, the embryo reaches the surface of the corpus luteum; but, not being received by the tube, either attaches itself to the external surface of the ovarium, or to some of the abdominal viscera. Even this, however, though more common than the former species of extra-uterine pregnancy, is so rarely met with, that it is recorded by authors, rather to prove the possibility of the case, than with the intention of making others expect to meet with similar instances.

The most frequent species of extra-uterine pregnancy, is that which takes place in the Fallopian tube, the embryo stopping in it during its descent. In this case, the tube performs the office of the uterus, and resembles exactly one of the uterine cells of the quadruped, both in thinness and shape. The gestation, however, can seldom be continued beyond the third or fourth month, from the inability of the tubes to extend any farther.

If these fœtuses do not die at a very early period, pain uniformly takes place, whenever the tube ceases to distend; and this is supposed to mark an attempt at expulsion. In consequence of this action, a degree of inflammation commences, which unites the cell or distended tube to the neighbouring parts. Suppuration next takes place, and the abscess

bursts, either externally, through the abdominal coverings, or into one of the intestines. By this process, the bones of the decayed fœtus are discharged with the matter, and the woman recovers, after suffering much pain, and having her health greatly impaired.

Sometimes, after a short continuance of pain, the woman becomes free from farther uneasiness, part of the fœtus being absorbed, and the rest remaining, like a confused mass, within the thickened tube.

It has been proposed to remove these fœtuses, by making an incision through the skin and muscles into the tube: But, unless the primary symptoms were very violent, and threatened immediate mischief, this practice is neither necessary nor allowable. In the subsequent stages,

it is, I apprehend, uniformly inadmissible. From the changes which take place in the child, owing to its retention, and from the alterations induced in the tube, by the irritation of the fœtus, we cannot expect, in the first place, to extract the whole of the embryo at once; and from the diseased state of the parts, we cannot, in the second place, expect a cure, without a great inflammation, and a very long continued suppuration, which surely are not very likely means of counteracting these effects, for the removal of which the operation was proposed. Making a superficial puncture or incision into the abscess of the tube, when it points externally, is a very different practice from this, and is not liable to any of these objections.

The only certain mark of these extra-uterine pregnancies is, feeling the motion

of the child, whilst we find the uterus and its neck not exactly the same which it ought to be in a common pregnancy.* But it is not always that this motion can be perceived; and, therefore, there is often a great degree of uncertainty with regard to the nature of these tumours. The symptoms of scirrhus, or dropsy, of the ovarium, are, it is true, frequently so well marked, especially after these diseases have continued for some time, as to prevent any uncertainty with regard to the nature of these tumours. But, at other times, the history and appearances

* In almost every instance of extra-uterine pregnancy, the uterus does enlarge a little, which may contribute to assist the diagnosis, distinguishing the disease from scirrhus or dropsy of the ovarium. From the swelling of the tube, the uterus is also frequently elevated, and the vagina elongated.

Sometimes, though rarely, the enlargement of the uterus, in the commencement of extra-uterine conceptions, is as great as it would have been in a natural pregnancy of the same period.

are so confused and unsatisfactory, that three men, equally eminent, shall each deliver a different opinion.*

Of the Blood-Vessels, Nerves, and Lymphaticks, of the Uterus.

THE uterus is very plentifully supplied with blood, and the vessels are nu-

* In forming a judgment of these tumours, we are to attend to the state of the woman with regard to menstruation, and to the feeling of the tumour, whether it be hard or soft, or fluctuates; to the degree of pain, and whether it came originally in paroxysms; to the progress which the tumour has made in a given time, and to the effects which it has produced on the neighbouring parts, and on the constitution. The state of the uterus ought also to be attended to; because the condition of the neck and other parts will assist the first part of our inquiry, which is, to determine whether the woman has conceived. The condition of the womb not corresponding to that which it ought to have been in the same period, in a natural pregnancy, will prove that the pregnancy is extra-uterine.

merous; but a sufficient knowledge of the vascular system of this organ may easily be obtained and recollected, by observing, that the blood is sent chiefly by two arteries, the hypogastrick and spermatick. The first of these supplies the lower, and the second the upper part of the uterus; and both of them have this general plan in their distribution, that they send off branches in three directions, upward, downward, and laterally.

The hypogastrick artery of the uterus, which is the largest of the two, meets this viscus near its cervix, and sends off branches immediately to encircle it: But the principal branches go off in two directions, the one downward, along the sides of the vagina, the other upward, by the sides of the uterus, spreading out, especially in its fore part, and anastomosing

with the descending branches of the spermatick artery.

The spermatick artery, at the full time, meets the uterus rather below its middle; it directs its main course upward, but sends very considerable branches down to join with the hypogastrick. Its lateral branches run obliquely upward, whilst its ascending branches, which may be considered as the continuation of the trunk, supply the fundus uteri, the ovaria, and the ligaments. There are, then, three facts to be remembered in the vascular history of the uterus:

First, The hypogastrick artery supplies directly the mouth and neck of the uterus, and the upper part of the vagina.

Second, The spermatick artery sup-

plies directly the fundus uteri and the ovaria.

THIRD, The descending anastomosing branches of the one artery, and the ascending branches of the other, supply, by their ramification, all the body of the uterus.

The veins follow the same general course with the arteries, and both are largest and most numerous where the placenta is attached. We ought, therefore, in the Cæsarean operation, not to cut near the fundus, but about the middle of the body of the uterus, and on its fore part: But, wherever we cut, we must expect a very sudden and great loss of blood; because the arteries, in many places, are equal to that of the wrist, and the veins are as large as those of the arm.

These veins anastomose much more freely than in other parts of the body, and are completely destitute of valves; so that, by fixing a pipe in one of them, the whole may be injected. From their magnitude, they have been called the uterine sinuses.

The blood vessels of the uterus form together one general and extensive plexus, and plunge, by branches of different sizes, down into its substance, and through into the placenta and decidua.

Anatomists have been very busy examining the nerves of the uterus, idly hoping thus to explain the sympathies which take place. But it is quite sufficient to mention, that the uterine nerves arise from the intercostals, and follow the same course with the vessels. They are, therefore, distinguishable into a sper-

matick and hypogastrick plexus. Their branches have been said to be somewhat enlarged during gestation; but this enlargement is so small, that its reality may be questioned.* I rather imagine, that pregnancy only allows us to trace them more easily, from the softness and distension of the uterus.

Lymphatick vessels have been often observed in the uterus of brutes, by Rudbeck, Malpighi, and Haller, and have been found on the surface of the human uterus by Mery, Morgagni, and many others. Every part of the uterus, and its appendages, is covered with these

* We know, that although the nervous substance be capable of increasing itself, yet, unless the nerve be divided or wounded, it seldom does so. In diseased joints, and other swellings, I cannot say that ever I have found the nerves enlarged, though frequently the vessels were very much increased in diameter.

vessels ; but it is only in the gravid state that they are easily detected. Before impregnation, they are exceedingly small ; but, in the end of gestation, many of the trunks are equal to the size of the barrel of a goose's quill. The branches are likewise so numerous, and so large, that when they are well injected, we would, as Mr. Cruikshanks observes, believe the uterus to consist of lymphaticks alone.

These vessels have been observed entering into the placenta ; or, at least, opening on the inner surface of the uterus.

The lymphaticks of the upper part of the uterus, and all those from the ovaria, run along with the spermatick vessels, terminating in glands, placed by the side of the lumbar vertebræ. Hence, in dis-

eases of the ovaria, there may be both pain and swelling of these glands.

But the greatest number of the uterine lymphaticks run along with the hypogastrick artery, several of them passing to the iliac and sacral plexus of glands, and some accompanying the round ligament. This may explain why, in certain conditions of the uterus, the inguinal glands swell and inflame. Others run down through the glands of the vagina; and hence, in cancer, and other diseases of the uterus, we often feel these glands hard and swelled, sometimes to such a degree, as almost to close up the vagina completely.

Of some of the Mechanical and Sympathetick Effects which the Gravid Uterus produces on other Parts of the System.

WHATEVER tends to impede the circulation of the blood, in any very large vessel, must affect the action of some other part of the vascular system. To be convinced of this, we have only to attend to those terrible consequences produced by strictures of the aorta, or to those fatal affections of the brain, which sometimes take place in elderly people, after the amputation of the thigh, or the ligature of any great artery.

IT has often been maintained, that, towards the end of gestation, one or both of the internal iliac arteries might be

compressed ;* and there are not wanting many histories, which have been recorded with a view to prove that this pressure has produced apoplexy, bleeding from the nose, hemoptoæ, or hemorrhages from the bowels. It is, however, very much to be doubted, whether these cases occur so frequently as some suppose. It is most certainly an erroneous principle, to ascribe these effects, in every instance, to the same cause; or to say, that because, in one case, the insensibility or the bleeding continued until labour was brought on, therefore, in every other case of the same disease occurring during pregnancy, the same cause, and a similar treatment, must be allowed.

* There is no doubt that the soft sides of the uterus, distended with water, often press on these vessels; but the pressure is very slight, the uterus yielding, and forming a groove or channel in which the vessels run.

Women, when pregnant, are undoubtedly subject to apoplexies, to violent hemorrhages, and to every other disease to which they are liable at other times; but it is unphilosophical to attribute these diseases to the accidental circumstance of pregnancy. The great vessels are not very apt to be compressed by the gravid uterus; and it is still less likely, that both iliacs should be affected at the same time. But, even granting the gravid uterus, in every instance, to press, in a greater or less degree, upon one of the great vessels, it does not follow, that any bad consequences should uniformly result from this. Those who are conversant in surgical operations, must know how great the force is which is required to stop the flow of blood through a large artery; and whoever attends to the relative situation of the uterus and vessels, and the weight of the

uterus, must admit, that the cause assigned is very inadequate to produce the supposed effect.*

Some may consider it as a matter of little consequence, whether we admit the pressure of the uterus to be a frequent cause of hemorrhage or not; but they are mistaken: Because those who maintain this opinion, will naturally, whenever they fail to check the disease by the common remedies, have recourse to delivery, by which, in almost every instance, they can only add to the danger.

* Although I have denied that this effect is commonly produced, I do not maintain that it never happens. On the contrary, I have seen both a spitting of blood, an epistaxis, and giddiness of the head, decidedly produced by pregnancy; but I never found it neccssary to interpose.

But, although I have said that the pressure of the gravid uterus upon the arteries can seldom be sufficient to produce any bad consequences, it may yet be able to affect the veins and lymphaticks; for these require much less force, and more trifling causes, to impede their action. It is in this way, that we are to account for the varices and the œdema of the legs, so frequent in some women, and which continue, in spite of every remedy, until after delivery.

By a similar pressure upon the nerves, we are to account for those cramps and feelings of numbness in the thighs, which are occasionally felt during gestation; and for that alternate coldness and glow of heat, which pregnant women sometimes complain of in the inferior extremities. This pressure may likewise affect the nerves at their origin, and

make the woman believe that she is in labour.*

The effect of the uterus upon the bladder and rectum, during gestation, has been already noticed; but these organs, especially the bladder, may be affected, in a greater degree, during parturition. From the union and connexion subsisting betwixt the uterus and bladder, we occasionally find the bladder protruded, during labour, by the pressure of the uterus. This might, at first, be taken for the membranes; but a little attention soon discovers that the tumour

* When this pressure produces much pain, during labour, either in the extremities or the belly, it has been proposed, to diminish the size of the uterus, by piercing the membranes; but I should suppose that this would have very little effect. The disease itself can very rarely occur; because, when the uterus is tense during labour, the nerves are out of the way of pressure.

does not arise from the os uteri. Little can be done, except emptying the bladder, and pushing it back, during the intervals of pain. During the end of pregnancy, the bladder is sometimes pushed lower done than usual, and, when empty, gives a very curious feeling to the finger, resembling somewhat the soft mouth of the uterus after delivery, the middle yielding a little before the finger, and the sides projecting over it; but its vicinity to the pubis must prevent any mistake with even the youngest student.

Besides these effects, there are others, produced by the uterus on distant parts, by means of that sympathetick connexion which so evidently prevails in every part of the animal body.

During menstruation, the derange-

ment of the stomach or intestines, and the various affections of different parts of the system, called hysterick, point out this association. With the stomach there is a very intimate union, in so much that, in many women, the action of menstruation affects that organ to a very great degree; and, in almost all women, the commencement of pregnancy is marked, not only by vomiting in the morning, but also by more or less of a permanent dyspepsia. With the mammæ, the sympathy is, if possible, still stronger; for, when gestation begins, these begin to enlarge; and, when it ends, their secreting action immediately appears. But the most dangerous sympathetick affection is that subsisting betwixt the uterus and the brain, producing those dreadful convulsions which sometimes attend labour. These convulsions, or epileptick attacks, seem, in many cases, to depend on the

very irritable state of the uterus in labour, which affects the brain much in the same way with wounds, and other irritations of the nerves.

They are often preceded by giddiness, slight raving, and violent pains of the head, aggravated during each pain, and not unfrequently by spasmodick affections of particular parts, especially the stomach. In these circumstances, bleeding from the temples, cold air, and sometimes anodynes, may prevent the accession of any epileptick paroxysm. But, occasionally, in spite of every preventative, they do supervene, either during labour, or after the expulsion of the child.

When they occur during labour, delivery is certainly a desirable event. But were we, in the beginning of labour, to increase the irritation, by forcible at-

tempts to dilate the os uteri, we should certainly do hurt. If, however, the labour be so far advanced as to enable us to deliver easily, we may do it; because we thus have the chance of getting sooner rid of the irritation, although, by our interference, we give a temporary increase to it. It is, at the same time, disagreeable to know, that this will not always abate or remove these affections. The retention of the placenta, and clots of blood, or even the contracting condition of the uterus, which necessarily continues for some time after labour, is often sufficient to keep them up; or, in some cases, to induce them, although they formerly were not present.

Delivery, then, is, in the beginning of labour, improper; and even when it is farther advanced, is very uncertain in the relief which it affords. Still, in this

period, the practice is not to be forgotten, when we can do it without any material increase to the irritation, and when the other remedies have failed.

THERE is another sympathetick affection, which is by no means uncommon, and which is exceedingly troublesome; I mean, that swelling of the thigh and leg, to which some women are subject after delivery.

THIS appears sometimes a few days, but oftener a week or two, after delivery, and begins, without any evident cause, with a pain and tension in one of the groins. This is speedily followed by a colourless swelling of the integuments, gradually extending down the thigh and leg, which become stiff, and extremely painful. At the same time, the pulse quickens, the thirst increases, and a fever

supervenes, which bears more resemblance to the hectick, than to any other species. At first, the patient is generally costive, but afterwards a diarrhœa is not uncommon. During this disease, the lochial discharge, and the secretion of milk, are not necessarily affected.

This swelling is not œdemetous, for it does not pit upon pressure, at least without considerable force, nor is water evacuated by a puncture. When it has continued for some time, it is not uncommon for the glands, at the knee and groin, to swell, and become painful.

After a few weeks, the disease generally subsides, the fever diminishes, the appetite returns, and the patient gets well.

We are not yet well acquainted with

the cause of this disease; but I do not see that we can account for it mechanically, upon the supposition of pressure; for it occurs at a time when the effects of pressure ought to be least.* I am more disposed to consider it as a sympathetick affection.

The treatment consists in attending, upon general principles, to the affection of the constitution, and the state of the bowels, whilst, at first, we apply warm fomentations to the part affected, and afterwards employ gentle frictions, with anodyne balsam, or soap liniment. But,

* It may be said, that although the pressure be now removed, yet its long continuance has over-distended and weakened the lymphaticks, the effects of which now appear. But were this the case, then the disease ought to appear sooner after delivery than it sometimes does: it ought sometimes to occur during gestation; and ought, lastly, to take place more universally than it does.

in many cases, the disease follows its own course, and resists, for a certain time, every application.

Of the Contents of the Gravid Uterus.

In opening a gravid uterus, we find a child contained in its cavity, with a vascular cord running from the navel to a particular part of the womb. Here we find it inserted into a thick flat cake or placenta, from the edges of which there goes off a membraneous covering, lining the uterus every where, and investing the child. The consideration of these different parts, then, must be made connectedly, and the dependence of the one upon the other held always in view.

This mutual dependence is so great,

and the history of one part implies so much knowledge of all the rest, that it is difficult to say, where a regular demonstration ought to commence. Nevertheless, I shall begin with a general account of the child; next, I shall describe the umbilical cord, or the vessels which connect it to the placenta; then, I shall examine the placenta; and, lastly, the membranes.

Of the Fœtus.

The exact time at which the embryo, with its coverings, descends through the tube into the uterus, and becomes the subject of examination, has never been exactly ascertained. Neither is its size, when it does descend, well known; but its increase afterwards is very rapid.

I HAVE never been able to ascertain exactly the history of such women as I have inspected; and, therefore, I cannot, from my own observation, say when the embryo is first to be seen in the uterus. But it is allowed by most anatomists, that this does not happen until the end of the first month. I have observed a vesicle in the Fallopian tube, containing a turbid fluid (similar to that which is found in the young ovum of the bitch) when, from the state of the uterus, I was certain, that, if it was an ovum, it could not have been above a week or two old.

ALTHOUGH it be now generally allowed, and highly probable, that the human embryo is not visible in the uterus until the end of the first month, yet many have declared, and, I dare say, really believed, that they have seen it

much sooner. Maningham says, that, on the sixth day, the embryo is to be discovered in the uterus, and is as large as a grain of barley. Boehmer tells us, that, in one week, the membranes are as large as a bee, and involve a fœtus like a little worm. Puzos makes the fœtus like a bee, on the fifteenth day, and the membranes like a walnut. Whilst Everard, resolving not to be blinder than the rest, says, that, on the seventeenth day (although how he is so certain of the date he does not tell us) he saw a little human being, with its extremities formed. But this is nothing, when compared to the discovery of Mauriceau, who, in the tenth week, saw a little creature, who moved his arms and legs, and opened and shut his mouth—no doubt as a compliment to the observer.

For a considerable time after concep-

tion, the fœtus is soft and mucilaginous; and, therefore, must be dipped in spirit of wine before it can be examined. This alters, in some degree, its shape, producing a contraction of the parts; and to this cause Baron Haller attributes that distinctness and sharpness which some painters give to the embryo, and which naturally does not exist. About the seventh week, the embryo is about the size of a bee, and is still gelatinous. In the eighth week, it has been seen a little larger, and consisting of two oval masses, which are the head and trunk. The body is both a longer and broader oval than the head, which is inclined forward on that part of the body which is to become the breast. The division of the two ovals corresponds to the neck. On examining the head, we find two small dark coloured circles, which are the eyes. They are placed at a great

distance from each other, and very low down, and in the centre of each is seen a white speck.

Soon after this, a small eminence is observable, corresponding to the nose, and an opening in the place of the mouth. The extremities likewise, about this time, begin to sprout out, the arms being directed obliquely upward toward the face. This embryo weighs about a scruple, whilst the membranes are as large as an egg, and weigh in proportion.

After this period, both the growth of the whole fœtus, and the developement of particular parts, proceed very rapidly. In the twelfth week, the fœtus weighs about an ounce and a-half,* and mea-

* Some say that it weighs three ounces; but they surely must have made some mistake.

sures, when stretched out, three inches. The head and features are completely formed; but the extremities, especially the inferior ones, are small in proportion to the body. The skin of the abdomen, which was open in an earlier period, is now generally, though not always, closed up, and the intestines covered.* The membranes are larger than a goose's egg, and weigh several ounces; but the proportion soon comes to be reversed, the fœtus weighing more than the placenta and membranes. In the fourth month, the fœtus is about five inches long. In the fifth month, it measures six or seven inches. By the sixth month, the fœtus is perfect in its shape and formation, measures eight or nine inches, and weighs nearly one pound troy: The

* I have seen the abdomen open so late as the fourth month.

membranes and placenta weigh about half a pound. In the seventh month, it has gained about three inches. In the eighth, it gains as much, or more, and weighs four or five pounds, whilst the membranes and placenta weigh only about one pound. At the full time, the fœtus weighs from five to eight pounds, and measures about two and twenty inches. The placenta weighs from a pound to a pound and a-half.

It is probable, that, at first, the embryo grows by a kind of hydatid life; but, very soon, a more perfect action takes place, and a heart is found contracting regularly. The voluntary muscles, however, do not receive their muscular action until the fourth or fifth month. The child, then, begins, for the first time, to stir, and is said to quicken or be animated.

The peculiarities of the fœtus, with regard to the circulation, the position of the testicles and ovaria, and other circumstances, cannot be properly considered at this time.

At birth, the head is found to be small in proportion to the body of the child, and the superior extremities proportionally larger than the inferior. The skin is covered with a kind of unctuous scurf, which is supposed to be produced by the cuticular excretions.

When in utero, the child assumes that posture which occupies least room. The trunk is bent forward, and the chin pushed down upon the breast; the knees are drawn up close to the belly, and the legs laid along the back part of the thighs, crossing each other; the arms are thrown into the vacant space betwixt

the head and the knees. Thus we see that the fœtus forms an oval figure, of which the head makes one end, and the breech the other. One side of it is formed by the spine and back part of the head and neck, and the other by the face and contracted extremities. The long axis of this ellipse measures about ten inches, and the short one about the half of that. In the eighth month, the long axis measures about eight inches; in the sixth, about six inches; and in the fifth, betwixt four and five. In the fourth month, it measures about three inches and a-half; and in the third month, about two and a-half. In the early months, however, there is no perfect oval figure formed, and these measurements are taken from the head to the breech, which afterwards form the ends of the ellipse. The extremities are then

small, and bend loosely toward the trunk.

Much attention has been paid by accoucheurs to the dimensions of the child's head, and the proportion which it bore to the different diameters of the pelvis. These measurements, however, are not of that practical consequence which some suppose; because, although it be certain that the dimensions of any pelvis will always continue the same, and can only permit a body of a certain magnitude to pass through it, yet we never can ascertain the exact size of the head which is to pass, because this is constantly changing as labour advances. It would, therefore, be highly improper to take the measurement of a child's head, after a natural and easy labour, and then say, that every pelvis which was too small to allow a body of this dimension to pass,

must require our interference with instruments. It ought likewise to be observed, that this comparison of the size of the head, and width of the pelvis, is often, in practice, made upon wrong principles. It has been said, that the head, from the forehead to the vertex, measures so much; and that the diameter, from ear to ear, is likewise so much. This, then, has been compared to the length and breadth of the aperture of the pelvis, and a certain allowance made for the overlapping of the bones. But this calculation is wrong; because the head does not descend, with its long diameter, parallel to the brim of the pelvis. On the contrary, the vertex descends first, and the rest follows, like a cone, or rather a wedge.* The vertex ought al-

* Even many of those who knew that the vertex descended first, have thought, that the *anterior fontanelle* ge-

ways to be felt in the axis of the pelvis ; and it is the diameter of this part which we are first to attend to. The diameter of the presenting part of the

nerally presented at the commencement of labour, and that the vertex did not descend until labour had advanced a certain length. But, in most cases, the vertex lies over the os uteri from the very first. If, however, the long diameter of the head should, at any time, be felt in the beginning of labour, parrallel to the brim of the pelvis ; that is to say, with the anterior fontanelle in the axis of the pelvis, it seldom remains long in that position ; a very few contractions of the uterus bring the vertex into the axis of the superior aperture, and push the chin down upon the breast. In this way, the head descends, until it has cleared the superior aperture, and reached the lower part of the pelvis. The vertex is then, partly by the situation and position of the vagina, and partly by the bones and muscles co-operating with this, like inclined planes, directed forward into the axis of the inferior aperture of the pelvis, and protrudes first. This never can fail to happen, when the vertex presents ; because its projection from the neck, which is to be considered as the centre of motion, correspouds to the direction and curve of the vagina, whilst the face finds a free cavity to turn into, within the

vertex, or the apex of the cone, is very small; and, by continued pressure, it may be so lengthened out, and its shape so changed, that a child shall pass alive through a pelvis, the diameter of which, from pelvis to sacrum, is under three

hollow of the sacrum. The vertex, then, in a natural labour, is the great point to be attended to, on the part of the child: It takes the lead in every step of the descent.

If the anterior fontanelle should present, and continue to descend first, then the labour would be very tedious, owing to the size of the descending body. But generally, in this case, the fontanelle turns out of the axis, and the face presents. Face presentations produce difficult labour, because the natural turnings cannot readily take place, the projections of the head not corresponding to the cavities of the pelvis. The bones likewise cannot so readily overlap. It is, however, seldom necessary to use art, time being sufficient for the purpose. The descent, if very tedious, may be assisted, by hooking the fingers under the chin, or introducing them into the mouth, and pulling down, whilst we endeavour to turn the vertex fully into the hollow of the sacrum.

inches.* We ought, therefore, not to be rash in lessening the head of a child, upon the presumption that it cannot be otherwise delivered; for it is truly asto-

* I grant, that these instances are rather to be wished for than expected; because, although it be proved that a child has occasionally passed alive through a pelvis only two inches and a-half in diameter, yet, in most cases where the pelvis is under three inches, the child dies. Still, as there is a possibility of life being preserved, if the diameter be not much under that dimension, it is, at all times, proper to ascertain fully what effects the action of the uterus may be capable of producing, before we proceed to lessen the head. If, however, we find the deformity to be very great, we ought to perforate the head as soon as possible; because we thus have a greater effect produced by the uterus on the diminishing cranium, whilst we can expect no advantage from delay.

Various instruments have been invented, to ascertain the exact size of the pelvis; but all of them are liable to objections. The finger is the best, and can be most safely depended upon. Early in labour, we may estimate the diameter of a pelvis, by feeling for the projection of the sacrum, and then moving forward the finger to the symphysis pubis. By repeating this, and moving the finger

nishing to how great a degree the bones of the head may, in some instances, fold over each other, without producing death.*

backward and forward, we may form a tolerable guess of the diameter; and, by examining the sides of the pelvis, we may ascertain where the largest opening is; for, in a deformed pelvis, one side is generally narrower than another. If the vagina permits, we may also ascertain the diameter, by introducing several fingers, and observing how many can be spread out between the pubis and sacrum. My fingers scarcely cover two inches and a-half; if, then, I could not freely introduce these, provided the vagina permitted, in the beginning of labour, I should not expect to deliver without perforation, unless the projection of the sacrum were turned very much to one side of the pelvis, and the other side were proportionally larger. When labour has advanced farther, we may ascertain the diameter, by examining the pelvis with the finger, at the same time that we correct our estimate, by observing the progress which the head has made, and the acuteness of the angle of the wedge which it forms.

* The bones of the head, in every labour, form a wedge; and we may judge of the narrowness of the pelvis, or the degree of compression, by the sharpness of this

This depends upon the imperfect action of the brain, before birth; but, after delivery, when the functions of the brain manifest themselves more completely, a change of shape, or mechanical injury, infinitely less than that which happens during labour, would prove fatal. Unfortunately, however, these instances of no bad consequences resulting from pressure on the brain are not universal; for, in tedious and unnatural labours, a great many children die. But still the possibility of their surviving is such, as to prevent our

wedge, or the acuteness of its angle. The bones, in this state, have been grossly, though aptly, compared to a "sow's back." From this compressible state of the bones, or lengthening out of the skull, the head might pass almost through any pelvis, if the fore part or line which subtends the angle of the wedge, yielded in the same degree with the parietes of the cranium. Life, however, could not be preserved under a certain diameter, even although delivery could be naturally acccomplished.

using such means as shall inevitably destroy them, when these can be avoided, even although we might, by having recourse to them, save the mother from considerable pain.*

In the natural position, the child lies always with its head across the pelvis, and the nates turned toward the fundus uteri. One of the sides lies toward the spine, and the other toward the navel of the mother. The sides, however, are never exactly opposite to the back bone

* By evacuating the brain, we allow the skull to lengthen out, or the angle of the wedge to become very acute, much easier than if the brain remained, and the cranium continued entire. The woman would, therefore, be thus saved from considerable pain. The effect of opening the head is such, that frequently the labour may be finished naturally, after the perforator is employed. But occasionally we are obliged to fix the crotchet on the head, and lengthen it out still more, by the force which we can thus command in drawing it through the pelvis.

and the navel, but to some point betwixt the side of the mother and these parts. The forehead must then be directed toward one of the sacro-iliac junctions of the pelvis, and the occiput to one of the acetabula.

Until not very long ago, it was believed, that the child sat quietly on its posteriors, until it acquired the power of moving, in the fourth month, when it suddenly made a somerset, and alighted on its head. Physiologists were much puzzled to account for this, until some, wiser than the rest, thought it adviseable to inquire into the certainty of the fact, before they invented a theory to explain it. The truth is, that, with very few exceptions, the navel string is so inserted, that the head always belongs to the heaviest part, and falls down.

An awkward position of the child is considered as apt to produce pain to the mother, during gestation; and that it renders labour difficult, is well known. There are, however, few possible positions or presentations which will absolutely prevent labour; but, in some of them, delivery will be sooner and easier finished, by artificially turning and bringing down the feet. This is a practice which has been long followed with success, and which is frequently pointed out and followed by nature herself. In very forbidding and alarming situations, it is not unfrequently found, that the pressure of the womb acts so upon the child, as to make it turn, to a certain degree, without any assistance, after which the labour goes on smoothly.* I be-

* This natural turning of the child was first observed by the ingenious Dr. Denman. He was the first who

lieve, that if we, in this respect of turning, take nature for our guide, we should save the woman much pain, and perform our operation with less danger and difficulty. In presentations of the arm or shoulder, for instance, it is an established rule, to turn and bring down the feet, pushing up the shoulder and head. But, when the uterus is much contracted, this is by no means easily done, to the extent which some demand; and the force which is required to move the head or shoulder, is very apt to prove hurtful. In these cases, it is quite sufficient to lay hold of the feet, and bring them down into the vagina, retaining them there by

proved, by experience, that when the hand projected into the vagina, and the shoulder was pressed down into the pelvis, by the action of the uterus, so as to make it impossible to turn, the woman did not die; but the child, by degrees, turned round, the breech or feet presenting. Vide Medical Journal, Vol. V.

a ligature round the ankles. When this is done, the force of the uterus very soon pushes down the breech, and makes the shoulders and head turn up.

Instead, then, of fatiguing the woman, or tiring ourselves, with attempts to pull down the breech, and deliver the child, we will act much more wisely to do no more than bring the feet into the vagina, when this can be done, and leave the rest to be accomplished by the natural contractions of the uterus.

When one or both of the feet present, the labour goes on smoothly. The same observation applies to the presentation of the breech.

Neither the belly nor the back can be properly said to present; because, although these may be felt early in labour.

yet the action of the uterus soon forces either a shoulder or the breech to the os uteri.

Of the Umbilical Cord.

The umbilical cord is found universally in the animated kingdoms of nature, if by it we understand a system of vessels connecting the fœtus to the placenta or uterus of the parent. It is found in birds, quadrepeds, fishes, and plants; but in these it is not uniformly of the same appearance; yet it must be allowed to exist, as in all these we find a communicating substance going out from the embryo to the placenta or membranes.

In the human subject, this cord consists of three vessels, of which two are

arteries, and one is a vein. At the first view, this might appear to be contrary to the general order of the vascular system, the veins always being more numerous than the arteries: But if we attend more minutely, we shall perceive an exact correspondence, the office of these two sets of vessels being reversed in the umbilical cord and placenta. The arteries, therefore, which are to be considered as veins, ought to be most numerous.

These two arteries come out at the navel of the child, and run in distinct trunks, until they reach the placenta, when they ramify like radii, and dip down into its substance. When they begin to ramify, the one artery sometimes sends across a canal to anastomose with the other. The vein commences in the placenta by a number of rays, each tending to the common trunk. The area of

this trunk is double that of one of the arteries. Its insertion is the same with that of the arteries.

Although these vessels run in distinct trunks, without connexion, yet they do not run in a straight line, but assume a spiral turn, the one round the other. This twist is generally from right to left. Besides this turn, the vessels frequently form, at short intervals, coils upon themselves.

These vessels are completely destitute of valves.

The cord does not consist entirely of vessels, but also of a ropy tenacious gluten, contained in numerous cells, covered with a reflection of the chorion and amnion. In this gluten the vessels lie imbeded. The proportion of ropy matter is

much greater in the early periods than afterwards, and the vessels are seen running in it like fine threads.

Besides the blood-vessels, there is in brutes another vessel, running along the cord, called urachus. This arises from the bladder of the fœtus, passes out at the navel, and runs along the cord, to a sack contained betwixt the chorion and amnion, called allantois. This is merely a cavity for containing the urine of the fœtus out of the body, whilst the urachus is the duct leading to it. The fœtus of brutes may, therefore, be said to have a double set of urinary organs, two ureters and a bladder within the body, and one ureter and a bladder without the body.

Many have asserted, that a similar structure existed in the human fœtus ;

but it is a mistake. There is indeed a connexion betwixt the bladder and the cord, but it is merely a small, white, ligamentous strip, running along the cord, and quite impervious. This, from analogy, has been called the urachus ; but it resembles that vessel only in situation.

Glands, lymphaticks, and nerves, have also been described, but have never been demonstrated, in the cord.

Until about the sixth week, the belly of the fœtus is in contact with the placenta ; but, after this period, it begins to recede, and a cord of communication is perceived. About the eighth week, this cord is nearly an inch long ; but the vessels are parallel to each other ; nor do they begin to twist and become spiral, until the end of other two weeks.

The most common length of the cord, at the full time, is about two feet; but it has been found from six inches to four feet long and upward. When too long, it is often coiled up and entwined round the child; or, occasionally, it has knots formed on it, most likely owing to the child passing through a coil of it during labour.

The blood is received pure from the placenta by the umbilical vein, and conveyed by it to the navel of the child. Here the vein enters, and passes into the liver, dividing in it into many branches, which ramify through the substance of that gland, whilst the continuation of the trunk runs forward, and terminates in one of the branches of the vena portæ. Thus we find, that one portion of the pure blood of the umbilical vein is distributed to the liver, whilst the rest is sent

directly to the right auricle of the heart; but, previously, it is mixed in its passage with the impure blood, in the vena portæ and vena cava.

There is, then, by this contrivance, a mixed blood in the right side of the heart, which is purer than the venous blood of the fœtus, but much less arterial than the blood of the arteries after birth; from which we may infer, that a very great change takes place in the system and constitution of the child after delivery. When the right ventricle contracts, the blood is not sent through the lungs, as it is after birth, but directly into the aorta, at its curvature, by a vessel running from the pulmonary artery into the aorta. By this construction, we see that very little blood should enter the left auricle; and, consequently, that the whole left side of the heart should be al-

most empty. But, to prevent this circumstance from happening, we find an opening or valve in the septum, betwixt the auricles of the heart, which permits the blood to flow from the right to the left side directly, and then the whole heart is equally filled. It is for preserving the heart in a state fit for acting after birth, that we have both a foramen ovale and a ductus arteriosus. Either of these individually would have served the immediate purposes of the fœtal circulation: But by thus dividing the blood, both the pulmonary artery and the left side of the heart are kept of a proper size, and in a due state of action.*

* The use of the sides of the heart is, in one respect, the reverse in the fœtus of what it is after birth. In the fœtus, the right side receives the purest blood, whilst the left receives it after birth. In the adult, the blood which is in a state fit for circulation, is collected in the left side;

By the aorta, this semi-arterialized blood is distributed to the body; but instead of the whole blood in the descending aorta being conveyed to the viscera and inferior extremities, one-half of it is sent directly to the placenta; for the internal iliac arteries turn upward to the navel, through which they pass,

and, therefore, the great artery of the body arises from that side. On this account, there must of necessity be a communication betwixt the aorta and the right side of the fœtus, which performs the functions of the left side of the adult heart. If this communication does not close up after birth, then the contents of the right side continue still to be sent into the aorta. But as the quality of the blood of the right side is now materially different, very different consequences take place from those which resulted from the same mechanism before birth. The whole blood of the body is now rendered impure, the purposes of circulation are only half performed, and the unfortunate individual drags on a most miserable existence, until he sinks prematurely into the grave. One man, from whom I procured a preparation of this kind of heart, lived this unhappy life for forty years.

and form the two umbilical arteries. The blood, therefore, which is returned to the placenta, is as pure as that which circulates in the arteries of the child, and, therefore, requires a less change to convert it into the state in which we find it in the umbilical vein.

Two diseases of the cord have been mentioned by practical writers; hernia and rupture of the vessels.

The first is described by Wrisberg, Albinus, and many others, and must unavoidably be seen in every very young fœtus; for, at first, the intestines are not covered, and the aperture remains longest at the navel. Few fœtuses, in the early period of gestation, are without this hernia, which differs in nothing from the umbilical rupture of the adult, except in very soon spontaneously disappearing.

The second is mentioned by several continental writers, but is exceedingly rare. It may be produced by the erosion of ulcers, the bursting of a varix, or, if we may credit some authors, by a sudden jerk, in consequence of an exertion of the mother. The symptoms produced by this accident, are pain and distension of the uterus, with faintishness, and the other consequences of hemorrhage. After these symptoms have increased to a certain degree, the distension of the uterus separates part of the membranes, by which an open flooding soon takes place. When, to stop this, the membranes are punctured, the waters flow out, coloured with blood, after which bloody clots are expelled.

This species of hemorrhage, then, when it does occur, will be distinguished, when it happens before the membranes

burst, by a pain and swelling of the uterus, and a discharge of blood, owing to a separation of part of the decidua. The treatment is the same as in common cases of flooding.

Sometimes the cord descends in labour before the child, or is said, in the language of some, to present. This may happen in any posture or position of the child, and only, in so far as the life of the child is concerned, is to be considered as a troublesome circumstance. In this case, the cord may be returned beyond the head, or pulled to the side of the pelvis; or, if the first of these methods fail to prevent its descent, and the second to prevent its compression, we may turn the child, and expedite delivery. If, however, the child be dead, it is unnecessary to attend to the state of the cord, because its descent makes no

alteration in the labour, with regard to the woman.

This descent is frequently owing to the too great length of the cord. When the cord is too short, it has likewise been supposed to impede delivery; but this rarely occurs.

To conclude; there are not wanting men foolish enough to believe, that children have been born without a cord, and quite unconnected with the mother, the navel being skinned over. But it would be just as likely, that a man should live without intestines, or without a heart; and, therefore, I shall dismiss the subject.

Of the Placenta.

A PLACENTA, or something analogous to it, is to be found attached to the young of every living creature. In some, indeed, such as the sow, the vessels terminate on the membranes which perform the office of placenta; but, in most other animals, there is a defined substance destined for this purpose. In the cow, for example, we have numerous placentulæ, formed by efflorescences from the chorion, uniting with corresponding eminences, which arise from the uterus itself. These efflorescences, or collections of shaggy vessels, are called cotyledons, and the uterine eminences papillæ.*

* Some call the uterine eminences the cotyledon, and the fœtal part the placentula Vide Med. Essays.

Another class have only one placenta attached to each fœtus, such as the female of the human species, the mare, and, so far as I know, all those who produce many young at a litter, each being contained in a distinct cell of the uterus ; such as the rabbit, mouse, dog, cat, &c.

In some of these animals, the mouse and dog for example, the placenta is a cake, similar to those of the cow ; but, in the cat and others, it is in the form of a zone or belt.

In birds we likewise find placentæ ; but their form and structure are different ; for, in them, there are separate and distinct portions to perform individually those functions which the placentæ of women and quadrupeds perform alone. Thus, vessels are sent from

the chick to the yolk of the egg,* and to the membranes. One of these sets of vessels is destined for the function analogous to respiration, whilst the other seems to be solely appropriated for nutrition.

In the human subject, the placenta or gland to which the umbilical vessels run, is a flat circular substance, about a span in diameter, and, when uninjected, an inch in thickness. From its resemblance to a baked cake or biscuit, it has received its name of placenta or cake. It becomes gradually thinner from the centre to the circumference, by which it ends less abruptly in the membranes.

* The albumen contributes likewise to the nourishment of the chick; but it is impossible here to describe the minute structure of the egg, or to detail its physiology.

The common shape of the placenta is circular; but it is sometimes oblong, or divided into different portions; and Kirkringius tells us, that he has seen it consisting of seven separate lobes.

The umbilical cord may be fixed into any part of the placenta, or sometimes into the membranes, at a distance from the placenta. When this happens, the vessels run in distinct branches or trunks to the placenta, without forming any spongy substance on the membranes. Most frequently, however, the cord is inserted at a point about half way between the centre and the circumference of the placenta. From this the umbilical vessels spread out, like a fan, ramifying over the surface, and dipping down their extremities into the substance of the placenta itself.

On that surface of the placenta which is attached to the uterus, we observe it to be divided into lobes, with slight sulci between them. When recent, this surface appears to be covered over with a layer (of the decidua) like clotted blood; but, when washed and rubbed, its appearance is fibrous, and, to the touch, it is soft and spongy. It is, however, firmer towards the edges than at the centre.

That surface which is next the child is concave (whilst the other, as long as it is attached to the uterus, is convex) and is covered with the eminent trunks and branches of the umbilical vessels, over which we find spread the chorion and amnion. These cover the whole placenta, and afford an additional coat to the vessels.

By fixing a pipe into the umbilical vessels of a calf, we find that we can inject most minutely the cotyledon, but the papilla remains uncoloured. The reverse of this happens if we inject from the uterus.

If we inject from the umbilical vessels of the human fœtus, we find, that the placenta is rendered turgid, and vessels are to be found filled in every part of it; but always, between their ramifications, there remains an uninjected substance. Even the uterine surface of the placenta is not injected.*

* If we throw in warm water, and use considerable force, we may fill the uterine portion of the placenta, and from thence some of the uterine vessels. But this does not militate against the general fact, of an injection not passing from the one portion directly into the other. We might as reasonably suppose, that the arteries of the

If we inject from the uterine arteries, we, in like manner, render the placenta turgid; but nothing passes into the umbilical vessels; and, when we cut into the placenta, we find cells full of injection, and covered with a fibrous uninjected matter.

From hence we may infer, that the placenta consists uniformly of two portions, the one arising from the uterus of the mother, the other proceeding from the fœtus itself. In every instance, the fœtal part is temporary, and perishes after delivery. But, in most quadrupeds, the maternal portion remains permanent, forming a part of the uterus itself. In the human subject, however,

body terminated directly in the cellular substance, because we can render the hand œdematous by injecting water. In both instances, the effect is produced by transudation.

and in monkeys, both portions fall off blended together, and the surface of the uterus becomes smooth after delivery.

In order to understand this structure, I must anticipate what, properly speaking, belongs to the history of the membranes.

Before the embryo passes down through the Fallopian tube into the uterus, that organ is every where lined with a vascular substance, which is produced by the action of gestation taking place in the uterus. This, which has received the name of the tunica decidua, consists of two layers, the inner of which is entire, but the outer is perforated at the os uteri and entrance of the tubes. This outer layer enters, for about an inch, within the Fallopian tubes, and

descends down the side of the cervix uteri to its mouth, terminating in that gluten which shuts it up.

The ovum is likewise covered with a vascular coat, consisting of shaggy vessels, arising from the chorion, and called the spongy chorion. Now, when the ovum descends from the ovarium, it remains, so far as we know, only like a hydatid, until it arrives at the bottom of the tube. Here it is prevented from falling into the cavity of the uterus, by the inner layer of the decidua, which lies across the opening, and which yields before it, gradually distending in proportion as the ovum enlarges, until at last it comes in contact with that portion of itself which remains attached to the outer layer.

Thus we find, that when the ovum descends into the uterus, it does not fall

freely into the cavity, but is every where surrounded with a vascular coat from the uterus. With this coat the vessels of the chorion unite ; and were we, therefore, at this period, to examine the ovum, we should find, that its shaggy vessels united, at one part, with the decidua, at the Fallopian tubes, and, at every other part, with the inner layer, which it pushed before it, and which afterwards receives the name of the reflected decidua.

The embryo is at first a small speck, growing close to the side of its membranes, and most likely draws its support from that portion of the shaggy chorion which covers the part of the membranes to which it is attached. But when it descends into the uterus, the decidua gives an additional covering, and joins its aid to the increased demands of

the embryo; and the two vascular coats together form the placenta.

As that part of the membranes of the ovum to which the embryo is attached, generally enters the uterus last, it follows, if this account of the formation of the placenta be true, that the placenta will be formed originally over that part of the uterus, where the tube enters the decidua, at that spot joining with the chorion, to form it.* But in some instances the case is reversed, and the embryo enters foremost, the rest of the membranes following it. When this happens, then the

* This entrance of the ovum may be compared to the delivery of the child, at full time. In both, the membranes protrude first; at least, they always protrude first in labour, owing to the bulk of the child; and, most commonly, they protrude first from the tube, although, from the smallness of the embryo, this does not invariably happen.

inner layer of the decidua, which was stretched across the orifice of the tube, and which is afterwards to become the decidua reflexa, will contribute to the formation of the placenta. In this case, by the distension of the ovum, and the yielding of the decidua reflexa, the placenta will come at last to be inserted over the mouth, or over some inferior part of the uterus.

From this view, we see, that the shaggy vessels of the chorion form one portion of the placenta, and the decidua the other. It will farther be evident, that, at its very first formation, there will be no difference in structure or appearance betwixt the placenta and the rest of the vascular covering. It would, therefore, be impossible, in the very early period of gestation, to say what was placenta, and what vascular mem-

brane, unless we observed the point at which the inner layer of the decidua began to separate or be reflected. We can, then, very readily understand the surprise which many have expressed at the magnitude of the placenta, in the beginning of pregnancy, when, in reality, it has been very small. Some have thought, that, at first, the placenta surrounded the embryo ; others, that its magnitude was accidental ; whilst a third set denied what they examined to be a conception, but rather considered it as a mole.

But, when pregnancy is a little farther advanced, the placenta has a very different appearance ; for then it is considerably thicker, in proportion to its breadth, than even at the full time. When we examine an abortion at the third month, we find the placenta considerably thicker than it is broad, and

somewhat like an egg, one-half of which had been cut off. This appearance may be thought to depend upon the narrowness of the cervix uteri and vagina lengthening out the placenta during its passage: But we find the fœtal surface of the placenta very small in its diameter, and that it is not possible to stretch it out, so as to make the placenta thin.

The fœtal surface of the placenta is every where bounded by a duplicature of the true chorion, which dips down at the margin of the placenta, toward the decidua, separating the decidua reflexa from the placenta, like a partition, and forming a rim all around it. This rim or duplicature may, so far as I know, be seen at every period. It is distinctly seen in the third month, in the sixth month, and even at the full time.

The placenta, we have seen, consists of two portions, the one formed by the vascular coat of the child, and the other by the vascular lining of the uterus. These two portions, after maceration, may, with ease, be separated, to a certain degree, from each other, during the first three months.* The separation, how-

* When we separate these two portions, we may readily perceive, that the fœtal part shoots down all the way to the layer of the decidua, which covers the uterine surface of the placenta, whilst the maternal part shoots up to the chorion. The fœtal portion is arborescent, and consists of the most minute ramifications, springing from the greater branches of the umbilical vessels. The maternal portion has less of the arborescent appearance, but shoots out into innumerable irregular filaments or processes, having small cells betwixt them. It is not easy to observe accurately this structure ; because the preparation must be suspended in a fluid, and shaken, to make the different parts expand. This produces a constant change of place, which the eye cannot readily follow, so as to examine it intimately. Both portions collapse when taken out of the fluid.

ever, is seldom, if ever, perfect, on account of the particular connexion of the one set of vessels with the other. But the formation of the placenta may, at this period, be very distinctly shown, without any maceration or separation; for, by simply raising the decidua from the uterine surface, we see it shooting into the placenta, like a corraline, and by raising the spongy chorion from the fœtal surface, we see it likewise shooting down. By making a section of the placenta, we may demonstrate the same.

The structure of the fœtal portion, so far as we know, appears to be similar to that of the pulmonary vessels, the artery terminating in the vein. But the other portion is somewhat different; for here there is not a direct anastomosis, but the artery opens into a cell, and the vein begins from this cell; for, by throwing in

wax by the uterine artery, we may frequently inject the veins. These cells communicate freely with each other in every part of the placenta. By pushing a pipe down into the substance of the placenta, at the insertion of the umbilical cord, and securing it there by a ligature round the cord, including the pipe, we may not only fill the cells, but also the vessels of the uterus; or, if we try the experiment in a placenta detached from the uterus, we see the injection spout out on the uterine surface. When we cut into a placenta so injected, we find its substance full of wax, and are assured that it is not an extravasation, by the regular and granulated appearance of the injection in the cells. The maternal portion, then, may be compared to the corpora cavernosa penis, and the fœtal portion to the pulmonary system of the adult.

When we cut into the cord, we find that the blood in the arteries is of a dark purple colour, whilst that in the vein is redder. From this we may infer, that the placenta is a gland, producing a change on the blood of the fœtus, similar to that which the blood of the adult undergoes in the lungs.

From considering that the fœtus itself cannot create materials for its own growth and support, we may farther infer, that the placenta is the source of nutrition also. This nutrition, in the human subject, and in many other animals, seems to be performed entirely by the absorption of blood from the maternal, by the fœtal portion. But, in some other animals, it seems to be performed in a different way. Thus, in the chick, it is performed by the absorption of the yolk and the white of the egg, which

seem to be converted into blood by the vessels which take them up, in the same way as the chyle of the adult is converted into blood in his vessels. In the cow, again, we can easily squeeze out a white fluid from the maternal part or papilla, which most likely is absorbed by the fœtal part or cotyledon. We should, then, suppose, that the placenta of a cow was a double gland, one part of it secreting this kind of chyle, and the other acting as lungs: A third function might be added, namely, absorption.

In the human subject, the maternal part does not seem to be glandular, but merely contains blood, which is absorbed and taken to the fœtus by the umbilical vessels, which have a glandular action. Every secreting gland has two kinds of vessels, one carrying blood to it, and another performing the secretion. The li-

ver, for example, has one set of vessels entirely appropriated to secrete bile, and convey it to the intestines; and another entirely appropriated to the conveying of blood or materials for the other to act upon. In the same way, there are two distinct sets of vessels in the placenta, the one conveying blood to it, the other possessed of the power of changing blood, similar to the lungs, and, perhaps, endowed also with the power of producing some other change on the blood absorbed from the mother.

The glandular part, then, is formed entirely by the fœtus; the other belongs to the mother, and may be yielded by any part of the body: For, in several instances, we find the outer surface of the uterus, the intestines, mesentery, or peritoneal covering of the abdomen, in extra-uterine conceptions, shooting forth

vessels capable of conveying blood to the fœtus.

How this absorption is performed, or how these two sets of vessels are connected, is still a matter of conjecture. One thing, however, is certain, that the umbilical vessels do not open into or freely arise from the maternal cells, because they cannot be injected from them, any more than the biliary vessels of the liver and vena portæ may uniformly be reciprocally injected from each other.

Some have believed, that a direct communication did take place betwixt the fœtal and maternal vessels, and that the umbilical arteries of the child anastomosed with the uterine veins of the mother, whilst the arteries of the uterus were continued on to the child by the umbilical vein. If this were the case,

we could easily, by fixing a pipe into the aorta of the mother, inject not only the whole placenta, but also the whole child. Instead of this, however, we can only inject the uterus, and one portion of the placenta. It would likewise follow, that, if the cord were not tied immediately after delivery, the mother should bleed to death ; whereas not above an ounce or two is generally lost in this way. I know that it may be said, that the reverse of this has occasionally happened ; but, granting this to have occurred once, from some peculiarity of structure or unnatural anastomosis, it will prove nothing, unless it be established as a general fact ; for, if a direct communication be necessary, then, in every instance where the cord is not tied, the mother must bleed to death ; which the experience of the youngest

practitioner must prove not to be the case.

In the next place, the converse of this must likewise be true ; and, whenever the mother loses blood, the child also must lose blood ; and, if the bleeding from the mother continues, the child must die. But the collections of the writers on surgery disprove this, and show, that, although the mother dies from the division of large vessels, yet the child remains as full of blood as formerly, and lives after the mother's death.

These facts are well ascertained in the human subject, but will derive additional confirmation from attending to the placenta of quadrupeds. In them, the two portions separate easily, and not only have no communication which we

can detect by the syringe, but also are, in many of them, of a totally different appearance. In the deer, for instance, the one portion is sanguineous, the other has more of a gelatinous appearance. In the rabbit, the one portion is red and the other white.

If we take a living pregnant bitch, and pull out a piece of the cord through a wound in one of the uterine cells, keeping the fœtus in its place covered with the waters, we shall find, that, if we divide the umbilical vein, and leave the arteries untouched, a quantity of blood will be lost, proportioned to the size of the fœtus, which will be found dead and exhausted of blood. But if we tie the arteries before the vein be cut, very little blood is lost; and in neither of these cases does either the mother or the rest of the young suffer.

The placenta may be fixed to any part of the uterus, but most commonly it is attached to its fundus. Occasionally, however, it is found fixed over the cervix and os uteri, in which case it invariably produces a very dangerous hemorrhage: For, whenever the cervix begins to distend, a separation of the uterus from the placenta necessarily takes place, and the vessels bleed. If, by any means, this should be stopped for a little, it is sure to return, whenever either the coagula come away, or the cervix stretches farther. Even although it could be checked until the natural period of delivery (which is scarcely possible) it must then return from the dilatation of the os uteri, and the woman must speedily die, if assistance be not administered.

The older authors very simply imagined, that, in these cases, the placenta

was not originally placed over the cervix, but that, by some very unaccountable means, it had slipt down from its proper place, making the membranes also wheel round. Now, had this childish idea been true, the ovum must have been completely detached, and the placenta found lying loose over the os uteri, which is not the case.

THERE are two periods at which this attachment may produce flooding, namely, when the cervix begins to dilate, and when labour commences. It is, however, seldom delayed until the second period; for the distension of the cervix must produce a separation, which will bring matters much earlier to a crisis.

ABOUT the seventh or eighth month, the discharge of blood commonly appears, and continues violent for some

time, until at last a coagulum restrains or diminishes it. But this coagulum soon gives way, and the flooding returns as furiously as ever, until at last the strength decays, and faintings come on. This is the case with all floodings, let the cause from which they proceed be what it may; and, therefore, whatever we may suspect, we cannot declare the placenta to be attached over the os uteri, until we examine. By introducing the finger, we feel the spongy substance of the placenta lying across the os uteri, at the same time that the under part of the uterus has a thicker feel than usual. It requires, however, some attention to be certain, that we really feel the substance of the placenta; for clotted blood retained about the aperture may deceive us; and it is not prudent, at first, to push much with the finger, or to turn it much about, because we thus increase

the bleeding. A little time, however, generally determines the matter.

When flooding depends upon this cause, venesection, cold, and the usual remedies, may moderate or check it for a time; but the only radical cure is delivery. This, however, is, at first, difficult, or impossible to be accomplished, from the tightness of the vagina, and the firmness of the os uteri. The best practice, therefore, is to restrain the hemorrhage, by cold applications, or a plug, until the parts will more readily admit of distension.* We then introduce the fin-

* Until this can be done, the danger is not great, because, as long as the os uteri is firm and small, the bleeding is, comparatively speaking, inconsiderable. In this species of flooding, the quantity of blood which is lost marks the progress of labour, or the degree of dilatation; and whenever the flow is so great as to demand our immediate interference, we may be certain that delivery can readily be-

gers, to dilate the os uteri, and either separate the placenta, or push our hand through its substance ;* after which, we lay hold of the feet, and deliver slowly. I say slowly, because precipitation is useless, as well as dangerous, the body of the

accomplished. The danger of the case, from immediate loss of blood, and the ease with which we can operate, are exactly proportioned to each other. The propriety, therefore, of not interfering manually too soon, will readily appear; because, at first, we may, by cold and plugs, moderate the hemorrhage, until the parts admit of delivery; whilst we should inevitably increase the discharge, by beginning our operation prematurely, at the same time that we did not, by this conduct, gain one single advantage.

* Pushing the hand through the placenta is by no means so advisable as separating it, where this can be done; because the placenta, when attached over the os uteri, is generally less in circumference, and greater in thickness, than when attached at the fundus. We have, therefore, a great number of cells or vessels to tear, and find it difficult to pull the child through the mangled placenta, which will continually interrupt us in our operation.

child acting as a plug, and restraining the bleeding.

Delivery, then, is the only chance of safety, and this we begin as soon as the state of the parts will permit us. Evacuation of the waters, which is useful in other species of flooding, is useless here, and ought never to be procured, unless as preparatory to delivery, when we are ready to perform it. The necessary prelude to this evacuation, namely, the separation or piercing of the placenta, must increase the discharge, instead of abating it.

Flooding, from any cause, and especially from this one, is a most dangerous accident, and the greatest risk to which a pregnant woman is exposed. Nevertheless, I firmly maintain, that it ought seldom to prove fatal, if the practitioner un-

derstands his duty. It is melancholy to know, that this is an axiom not universally believed, and that those who lose most patients blush least for their blunders. A flooding is not a case in which we may temporize ; it is not one in which we dare delay. Rest, venesection, cold air, cold drinks, and apothecaries' phials, may, with propriety, be trusted to in trifling cases, or in bleedings which take place in the early months of gestation. Delay is here to be praised, and operations ought seldom to be talked of. But in those awful hemorrhages which take place in the end of pregnancy, no reliance is to be placed on the powers of physick, and procrastination, if it be not murder, is at least highly criminal. There is positively no excuse, at least in the generality of cases, for the loss of a patient from bleeding before delivery, when the pelvis is well formed. It is foolish to say, that

delivery was impossible, and death unavoidable, because, in every instance where the flooding is such as to require delivery, it can be accomplished. When the neck is not fully dilated, when the mouth is firm, and its aperture small, rest, cold, and plugging, will restrain the hemorrhage until delivery can be effected. Until this can be done, the discharge is in smaller quantity, and the weakness produced less rapid, and less to be dreaded. I will not perhaps be far wrong, if I say that the effect induced by the moderate loss of blood, at this period, does good, because it renders the os uteri more easily dilated. I may have expressed myself too strongly, but I think it unjustifiable to permit the student to believe that he shall be blameless when he loses a patient from this cause, more than a surgeon who allows a patient to die from a wounded artery. I have known a flooding prove fatal;

but these instances confirm me in my opinion, and give me additional cause to lament, that too many who practise midwifery imagine that a wish for the patient's recovery is sufficient to excuse them from pursuing early, decidedly, and unremittingly, that course which alone can give safety.

A SEPARATION of the placenta, even when it is not fixed over the os uteri, will produce flooding. But the consideration of this may, with propriety, be delayed until we come to speak of the separation of the membranes.

THE last observation which I shall make, relates to the retention of the placenta after delivery. This may proceed from three causes; from too firm adhesion to the uterus, from spasm, and from atony of the uterus.

The maternal portion of the placenta, or that part of the placenta which adheres to the uterus, is formed by the tunica decidua, or the caducous production of the uterus. It is by the efflorescence of this production, that the uterine portion of the placenta is formed; but we shall afterwards see, that a layer of the decidua may be separated from this cellular maternal portion; or, in other words, that the very outermost layer of the decidua vera does not contribute to the formation of the placenta, but is the intermedium of attachment betwixt it and the uterus. This layer at full time, as will be afterwards shown, is very thin and gelatinous, and the vessels are exceedingly delicate, on which account the placenta in general separates readily after the birth of the child. Sometimes, however, this portion of the

decidua is much firmer,* and the placenta adheres more strongly, becoming, in certain points, almost identified with the substance of the uterus. If the adhesion of the placenta be not universal, which is seldom the case, the portions which do not adhere separate, and the uterus being prevented from contracting, a hemorrhage takes place. In this case, the evident indication is, slowly to separate the placenta with the fingers, and extract it. If the adhesion be more universal, and no bleeding be allowed to take place from its separation, then the only immediate injury which the woman sustains, is the mechanical irritation of the uterus, produced by the presence of the placenta. But, afterwards, more serious consequences take place, from the

* Sometimes portions of the surface of the placenta become so firm and hard, as to resemble ossifications.

putrefaction of the placenta.* I know, that, in some cases, the placenta has been

* The system of pathology, which is founded upon putridity and depravation of the blood, is now most justly laid aside by most intelligent physiologists. But no one can ever think of denying, that the application of putrid matter to sensible and delicate parts, will be productive both of local injury and a general disease. The anatomist has sometimes fatally found that this is a truth; and the experience of every well employed accoucheur proves, that the application of putrid matter to the surface of the uterus, after delivery, not only produces a local affection, but also causes a febrile affection of the system, which often proves mortal.

When there is no flooding, we ought not immediately to make any forcible attempts to separate and bring away the placenta, or the portions which strongly adhere: But, after several hours, and before any putrefaction comes on, we may renew the attempt, and shall generally succeed, owing to a separation naturally beginning to take place.

The placenta grows soft and putrid much sooner than an equal weight of muscle placed in the same circumstances.

When flooding takes place, then we must procure the contraction of the uterus, and the previous expulsion of

retained for many weeks, and at last expelled, without any injury to the woman. But these cases are rare; and it is, at all times, warrantable and proper, to make cautious efforts to separate the attachment of the placenta with the fingers, after it has been retained for several hours, remembering, however, that too much freedom is not to be used in this way. There is a limit to our attempts; and, if we continue them beyond this, we do *certain* mischief by the irritation, merely to escape a *probable* injury.

A MORE temporary retention of the placenta is produced by the uterus contracting round it, like a sand-glass; and this frequently, though not always, is attended with hemorrhage. It is the

the placenta, or its greatest part, by the continuance of regular and cautious endeavours to detach it.

consequence of an irregular or spasmodick action of a particular part of the uterus. This is remedied by introducing the hand, and slowly dilating the constricted portion, after which we extract the placenta. Laudanum will also be useful, when the partial contraction is strong.

Lastly, The placenta may be retained from a weakness or want of expulsive power in the uterus. This is of no consequence when unattended with hemorrhage. But sometimes this weakness is accompanied with bleeding; the same cause which prevents the expulsion of the placenta, depriving us also of the contraction of the mouths of the uterine vessels. Occasionally, in this state of the body and fundus of the uterus, the mouth retains its contracting power; in which case, the placenta is retained, the blood of it is poured out, part of it

escapes, but still more remains, and distends the uterus, until it acquires almost its former bulk.* The same happens, if, during this torpor, we, in order to prevent the flooding, should plug the vagina without compressing the abdomen.

This is a very simple case; and yet I am sorry to say that I have known it prove a fatal one.

The indication here most evidently is, to extract the placenta, and, by continuing the mechanical irritation of the

* I have sometimes seen the uterus distended, after delivery, so as almost to reach the navel; and some authors mention, that they have seen it acquire its former size, though this I cannot believe. The clotted blood, provided that the woman survives, is either expelled by a kind of second labour, or it comes away in small pieces, mixed with serum or the lochia.

hand, to excite the action of the uterus, assisting this pressure on the abdomen. This, when duly persevered in, will seldom fail ; but, when it does, the woman never can die from the mere loss of blood, as long as we can plug the vagina, and prevent the enlargement of the uterus from effused blood, by pressure on the hypogastric region. Swathing the abdomen is a necessary precaution, immediately after every labour, to prevent the effect which would be produced by the sudden loss of that pressure which the intestines had been accustomed to during gestation ; and it ought never to be omitted in a case of flooding after delivery. The plug ought, likewise, always to be had recourse to, when the torpor of the uterus is so great that we cannot excite its action soon enough to prevent a great quantity of blood from being

lost. Cold applications to the belly and external parts are useful adjuvants.

The propriety, or necessity, of exhibiting cordials, or opiates, after a flooding has continued for some time, will be pointed out by the state of the pulse, the degree of pain, and attending circumstances.

This torpor is most likely to come on after difficult and tedious labour; but it may, in any case, occur in a greater or less degree. It is therefore proper, after every delivery, to inquire frequently, whether blood be lost; and when this does occur, it is most commonly from this cause.

When the directions already given are neglected, the bleeding continues until it be stopt or moderated by coagula;

the weakness increases, head-ache, vomiting, and difficulty of breathing, come on, not unfrequently attended with hysterick or convulsive fits ; and very soon the increasing weakness ends in death: For there is a certain degree of loss of blood, beyond which the patient cannot survive, even although for some time before death further hemorrhage be prevented. On opening the body, the uterus is found flaccid, and full of clotted blood.

Of the Membranes.

The membranes form a sack, which lines the uterus all round, and contains a fluid in which the fœtus swims.

In the beginning of pregnancy, we find four coats, which, collectively, receive the name of membranes : But,

when gestation is nearer a conclusion, we find only three, the two outermost becoming so intimately combined that they seem to form only one.

THERE are, however, only two coats which, strictly speaking, deserve the name of membranes, the amnion and the chorion; for the other two have not the appearance of membranes.

Of the Amnion, and the Fluid which it contains.

THE innermost membrane, or amnion, is thin, pellucid, and totally without the appearance of either vessels or regular fibres; yet, in the end of pregnancy, it is stronger than all the rest taken together. But, at first, the chorion is the strongest of the two: It lines the whole of the

membranes, covers the placenta, and mounts up on the navel string, affording a coat to it all the way to the umbilicus, where it terminates.

It is said, in a general description, that it lines the next membrane, or chorion; but, except upon the placenta, it is not in absolute contact with it, there being interposed betwixt them a stratum of clear gelatinous substance. The distance, however, betwixt these two membranes, is exceedingly trifling in advanced gestation; but, in the early months, it is considerable, and they are seen, the one like a small oval suspended within the other, which is a larger one, the intermediate space being filled with thin jelly:* But, even at this period, they are nearly in contact at the region of the placenta.

The sack formed by the amnion is

* Vide Plate II. fig. 2.

filled with a fluid which appears to be composed chiefly of water, with a very little earth, mucus, and sea salt. As this water is contained within the amnion, it has received the name of the fluid or liquor of the amnion, of the agnina, or amiculum, all which names this membrane has received, on account of its being supposed to cherish the fœtus. In general, the liquor amnii is almost free from colour; but, occasionally, it has a greenish hue, which is supposed to proceed from a solution of part of the meconium; at other times it is bloody, in which case the child is generally dead, and more or less putrid.

The quantity of water, upon an average, which is contained within the amnion at the full time, is about two English pints; but sometimes it is much more, and at other times scarcely six

ounces. In the early periods, the quantity is larger, in proportion to the size of the uterus, than afterwards.* Riolan says, that it amounts to three or four ounces when the embryo is no bigger than an ant; but this is an extravagant calculation. It is certain, however, that, were the quantity of water to increase in the same ratio during the whole of gestation, which it observes at first, it would, in the ninth month, weigh more than the woman herself.

Various opinions have been entertained concerning the origin of this fluid; and there is no source, however trifling, which has not been taken into account. The sweat, the urine, the saliva, and the mucus of the child's nose, have been all enumerated, as contributing to its pro-

* Although this be the case, yet the uterus is less completely filled in the beginning than in the end of gestation.

duction, even before the child had a nose to secrete mucus, or organs to yield urine. Others supposed it to be an exsudation from the cord or amnion, or an excretion from some supposed glands or lymphaticks. Its true source is still a secret ; nor is it of much consequence that we should discover it. It is, however, clearly a production of the mother ; because it is found in the greatest proportion when the embryo is most imperfect, and least able to furnish it. Some have likewise thought, that they have observed it to be in larger quantity when the child was feeble than when it was strong.

Haller, whose name ought always to be mentioned with respect, quotes two authors to prove, that, when the mother took saffron, the liquor amnii became yellow. Levret mentions, that, in one instance, it contained mercury, when

the mother had undergone a mercurial course ; but this is much to be doubted.

THE use of the liquor amnii is two-fold :

FIRST, It defends the fœtus, by allowing it greater freedom within the cavity of the uterus, and prevents the sides of the womb from being so much pressed against the child as they otherwise might have been.*

SECOND, It assists labour ; for, whenever the uterus begins to contract gently, the membranes protrude, distending the

* The quantity of fluid bears always an exact proportion to the delicacy of the child, and the injury which it would sustain from pressure. The utmost care is taken by nature to preserve the embryo, while it is yet soft and imperfectly formed. There is not only a greater quantity of fluid to defend it, but also the bag which contains it is suspended within a second sack, which, in like manner, contains a fluid.

parts gradually, and at last, by their bursting, they excite stronger action, as has been already mentioned.

Formerly it was believed, that the child drank the liquor amnii, and consequently voided it again by urine, or sent it off to the placenta. But the single fact, of children being born without a mouth, and yet strong, is sufficient, experimentally, to disprove what never could have been supposed by any one who thought accurately on the subject.

When the water is in too small quantity, it confines the child, and, by making more of its surface press on the neighbouring parts, may compress the nerves, and occasion cramps in the legs and thighs.*

* It has likewise been supposed, that, if the water was in small quantity, the child might, from the pressure and confinement, become deformed: But this can very rarely be the case; because the liquor amnii is always copious when

When in too great quantity, it produces inconvenience, by the distension of the uterus and pressure on the viscera. This is to be considered as a dropsical affection.

Of the Chorion.

The chorion, like the amnion, is thin and transparent. It is thicker and stronger than the amnion in the early months; but, after the middle of pregnancy, the relative strength is reversed, and the chorion becomes weakest.*

the fœtus is forming, and only diminishes when the formation of the child is so complete, that little effect could be produced by confinement. I do not see that we could account for a hand or a foot being turned awry, on this supposition, more than for a child being born with the cranium open and the brain a-wanting.

* This remark, however, does not apply to that portion of the chorion which covers the placenta; for this not only

It lies exactly on the outside of the amnion, but is never absolutely in contact with it. In the early periods, the distance is great, and the intervening space filled up with their jelly. Even in the ninth month, this intermediate jelly may be found, though in very small quantity. After delivery, it becomes so tough, that it may be separated from the chorion or amnion, as if it were a layer of these membranes.

The chorion, as well as the amnion, covers the placenta and the whole of the cord; and, at this place, there is either no intervening jelly, or it is in very trifling quantity.

These two membranes adhere firmly

preserves its original strength, but even appears to become firmer, preserving to the amnion its former relative thickness and density.

along the cord in the end of pregnancy; but, in the very beginning, they join each other only near the navel. There is at first no cord, the fœtus or embryo being in close contact with the membranes; but, by degrees, it recedes, and a cord of vessels connect it to the placenta. This is always covered closely by the chorion; because this membrane is kept firm by its attachment to the placenta and exterior vascular coat. But the amnion is loose, and has no such attachment: Therefore, the cord, when the child first begins to recede, is not covered close by it. On the contrary, it is drawn out rather like a funnel, adhering to the cord only near the navel. But, gradually, the adhesion spreads, and we quickly find it united to the whole cord, except a small portion near the placenta. Here, likewise, the adhesion, after some time, begins to take place; but, even in

the ninth month, we may generally, by inflation, separate the amnion, for a little way, from the cord. This is called the processus infundibuliformis of the amnion.*

The chorion adheres firmly to the placenta, and covers all the vessels which run on its surface; but it does not dip down with them into the substance of the placenta.

All round the placenta, at its margin, the chorion forms a small duplicature, which dips down, and seems to separate the placenta from the vascular membrane or coats. This rim may be observed in the ninth month; but it is most evident in the sixth month, and before it.

* Vide Albini, Academ. Annot.

The chorion, when the ovum first descends, is every where covered with vessels, which sprout out from it. These form a covering to it, which, from its appearance, has been called the shaggy or spongy chorion. These vessels, at least such of them as sprout from that part of the chorion which corresponds to the attachment of the embryo, are destined to support the embryo, and form the fœtal or umbilical portion of the placenta. All the rest, or those which cover that part of the chorion which is not in contact with the placenta, cease to enlarge, as if blighted in their growth by the increase of those which form the placenta. These blighted vessels, however, if such I may term them, do not become useless, but unite with the decidua reflexa, and serve to attach it to the chorion.

Between the chorion and amnion,

there is, in the commencement of pregnancy, to be found a small bladder, called vesicula alba, on account of its containing a white fluid. This lies on the concave surface of the placenta, about an inch from the insertion of the navel string, and from it there may be traced a very fine white line, for a considerable way along the cord, and sometimes even to the navel itself. This line has been called the urachus, but very improperly; for although the fluid can be squeezed along it for a little way, yet it soon becomes quite impervious. This vesicle has a small artery and vein sent from the end of the cord to be distributed on it.

The use of the vesicula alba is perfectly unknown; but it is evident, that it must serve some useful purpose in the fœtal economy.

In quadrupeds, there is a bladder like this contained between the two membranes; but it is incomparably larger, and is connected to the bladder of the fœtus, by means of a tube running along the umbilical cord. This tube, which is named the urachus, arises from the bladder, and continues small, as long as it runs in the cord; but when it reaches its extremity, it dilates, and insinuates itself betwixt the chorion and amnion, forming the bag which is called the allantois. Some have asserted, that they have found this receptacle in the human subject; but, the vesicula alba excepted, there is nothing perceptible which can be compared to it; and it is not very likely, that a bladder, capable of containing the urine of a fœtus for nine months, should be invisible, if it existed or were necessary. It is, indeed, true, that sometimes we find people who have

evidently an urachus continued to the navel, through which they discharge their urine. This I have seen, and Albinus * mentions several who have observed the same. But whether an allantois might have been found in the membranes of these people, had it been looked for, it is impossible to tell. This much, however, may, with certainty, be said, that if it had been found, it would have been a very uncommon occurrence, and that, naturally, the human fœtus has no such appendage.

It may not be improper to add, in order to prevent confusion in reading the works of old authors, that many of them call the chorion the allantois or false allantois, whilst they give the name of chorion to the vascular covering.

* Vide Albin. Acad. Annot. Lib. I. cap. vi.

Of the Caducous or Vascular Lining of the Uterus.

The last coat to be described, is one yielded entirely by the uterus; and, in the beginning of pregnancy, consists, according to Haller, of naked vessels shooting out from the sides of the uterus. But, after a very short time, it becomes a soft porous membrane, easily torn, and of a filamentous structure. This, as Harvey observes, is not a coat of the fœtus, but a lining of the uterus, which falls off after delivery; and, therefore, is called the caducous coat, or membrana decidua.

The anatomy of this production is exceedingly simple, and may be explained in a few words.

Immediately after conception, vessels sprout out from the uterus, and from the Fallopian tubes, for a little way within their cavity. These soon assume the appearance of a membrane, which may be divided into two layers. The outer of these is perforated in three different places, at the cervix uteri and at the insertion of the two tubes; because the action which forms this layer extends only a little way within the tubes and down the cervix. The inner layer is entire in every place, and, therefore, is extended or spread over these openings.*

When the embryo passes down through the tube, it is stopped, when it reaches the uterus, by this inner layer, which lies

* It is necessary here to correct a mistake of some who puzzle themselves to find out how the ovum gets behind the decidua reflexa, seeing that the orifice of the tubes is *not* covered by it. They have made a mistake in anatomy.

across the aperture, and thus would be prevented from falling into the cavity of the uterus, even were it quite loose and unattached. By the growth of the embryo, and the enlargement of the membranes, this layer is distended, and made to encroach upon the cavity of the uterus. This distension gradually increases, until at last the whole of the cavity of the uterus is filled up, and the protruded portion of the inner layer of the decidua comes in contact with that portion of itself which remains attached to the outer layer. We find then that the inner layer is turned down upon itself, covering the chorion ; from which circumstance, it has been called the reflected decidua, or decidua reflexa.*

* The annexed plate exhibits a plan of the membranes in the different stages of gestation, and will assist the reader in understanding the description.

Fig. I. (c) The cut edges of the uterus.

FIG. III.

FIG. IV.

FIG II

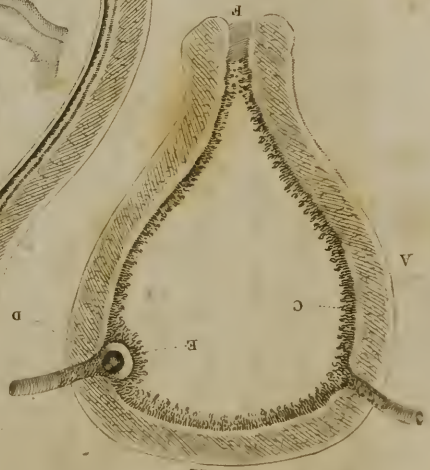

FIG I

Thus we see, that whenever the ovum descends, it is encircled by a vascular covering from the uterus, which unites in every point with those shaggy vessels which sprout from the chorion, and which make what was called the spongy chorion. One part of these vessels forms

Fig. I. (*b*) The Fallopian tubes, with the external layer of the decidua entering for some way within them.

(*c*) The two layers of the decidua, or shaggy fringed-like lining of the uterus.

(*d*) The dark coloured embryo, inclosed within the amnion.

(*e*) The chorion, covered with its own shaggy vessels, and the protruded portion of the inner layer of the decidua, forming the decidua reflexa.

(*f*) The mucus, which shuts up the os uteri, with the decidua terminating in it.

Fig. II. (*a*) The chorion, covered with the decidua reflexa.

(*b*) The amnion.

(*c*) The placenta.

The other figures represent the ovum at a more advanced period, but require no explanation.

placenta, and the rest gradually disappear, leaving the chorion covered by the decidua reflexa. This obliteration begins first at the under part of the chorion.

The reflection of the decidua, or its doubling down upon itself, is absolutely unavoidable, from the distension of the ovum; and the manner in which it does so is very easily understood. Yet, so far as I have seen, most students have at first been much perplexed with it. Even those who ought to have been best able to demonstrate this to others, mislead the reader,* and contradict themselves. Thus we

* Dr. Hunter himself (or his editor) although he confesses, that, in two cases where the decidua was formed, no ovum could be detected, yet conjectures, "that the ovum "passes from the ovarium into the cavity of the uterus, while "the coagulable lymph is pouring out by the arteries of the "uterus, which is afterwards changed into decidua." And adds, that "one can hardly imagine that the ovum should

are told by Dr. Hunter, that "the decidua vera divides itself at the edge of the placenta, into two laminæ, one of which passes between the placenta and the inner surface of the uterus, and the other forms the decidua reflexa, which covers the outer surface of the chorion."* And in the explanation of his valuable plates, he uniformly marks, that, at the edge of the placenta, the decidua begins to be reflected.† So far he is right; but how are we to reconcile this with the following passage, either of his own or his editors, in his posthumous work? The

"make its way into the middle of a membrane which is "already formed, and, though tender, yet capable of some "degree of resistance."—*Anatomical Description, &c. p.* 83.

* Anatomical Description of the Gravid Uterus, p. 80.

† Plates of the Gravid Uterus, plate xxxii. fig. 2. The letter M shows "the angle near the edge of the placenta, "where the inner layer of the decidua is turned over the "chorion, to form the decidua reflexa."

decidua, says he, " grows thicker and " more vascular, towards the placenta, at " the very edge of which it acquires a " considerable thickness, and, splitting in- " to two strata, is continued over both " surfaces of the placenta, but especially " the inner smooth surface, blending it- " self there inseparably with the umbilical " portion of the placenta."*

After this general account of the tunica decidua uteri, it will be proper to make a few more particular remarks on the two layers.

* Anatomical Description of the Gravid Uterus, p. 54.— In order to prevent the student from thinking that this assertion is an error committed from hurry, the editor, Dr. Baillie, thinks it proper to add in a note, that " the layer of the " decidua, which lies between the chorion and the placenta, is, " in one case, much thicker than in another. It sometimes " forms a smooth, tender, opake membrane, but is more fre- " quently reticulated, and occasionally there are portions " of it a good deal thicker than the rest, and which, shin- " ing through the transparent chorion, bear some resem-

I. *The Outer Layer of the Decidua Externa.**

This, together with the other layer, is formed very soon after conception, and before the ovum descends. It lines the uterus every where, and enters into all its openings. It penetrates, for an inch, within the tubes, and shuts them up after the descent of the ovum, so that no probe can be passed through them into the uterus. It descends down the cervix uteri, and is lost in that mucus which shuts up

"blance to pieces of fat. This layer is generally thicker "than that which adheres to the rough external lobulated "surface of the placenta." The membrane here alluded to is not part of the decidua, but is the spongy chorion which forms the fœtal part of the placenta.

* This is called decidua vera by Dr. Hunter; but surely the decidua reflexa deserves the name of *vera* as justly as this layer.

its mouth. But the most important point in its history is, that it unites with the vessels of the chorion, and forms a placenta. It has been said, that the umbilical vessels formed the placenta, or that this gland consisted entirely, or almost entirely, of their ramifications. But there is no anatomical point more clearly proved, than that these vessels form only a part of this substance, the rest being produced by the decidua externa and its vessels, forming cells. These two portions may, soon after the formation of the placenta, be separated from each other, like the papilla and placentula of the quadruped; and it is chiefly, if not entirely, for the purpose of forming this portion, that the decidua exists. For in all quadrupeds, where the maternal part remains permanently fixed to the uterus, no decidua is found; whilst, in those who

have no papilla, such as the tribe of monkeys, this coat always exists.

This layer, soon after the descent of the embryo, unites completely with the inner layer; and, therefore, if we were now to examine it, we would say, that the decidua split into two, at the edges of the placenta, one of the divisions going into the placenta, and the other spreading over the chorion.

The outer layer may, with care, be divided into several thinner laminæ, one of which always is continued over the uterine surface of the placenta, whilst the rest terminate in the placenta, and form its uterine, or maternal portion. Hence the placenta, or at least its cellular and fibrous part, does not adhere directly to the uterus, but has a thin lamina of de-

cidua interposed betwixt it and the uterus. This lamina, however, in the early months, adheres firmly to the more interior lamina, which forms the placenta. Therefore, when we attempt to raise it up, we draw out the placentary substance, in the same way as we do when we raise the chorion from the umbilical surface. This lamina is described by Noortwyk and others, and is supposed to send up processes betwixt the lobes of the placenta; but this is a mistake. This lamella is pretty thick and tough for some months, but it afterwards becomes much thinner, and very delicate, so that, after delivery, we find it resembling a thin layer of coagulable lymph, or red jelly, spread over the placenta; and, on its surface, we may observe the torn convoluted vessels which ran from the uterus to the placenta.

At first, the decidua externa, or vera, by which I mean the two united layers, is of considerable thickness; and, after being dipped for a time in spirits, appears evidently to be of a spongy, or fibrous structure: But, towards the end of gestation, it becomes very thin, and liker jelly, or tough mucilage, than a vascular coat. Even at this time, however, it is thicker near the placenta than elsewhere. But it cannot be now divided into laminæ: We can only separate it from the decidua reflexa, which is easily done, in so much that, in many places, it remains adhering to the uterus; and, in these places, the chorion is found only covered with the decidua reflexa. These detained portions soon come away with the lochia.

Although the decidua grows thinner toward the end of pregnancy, yet it ad-

heres more firmly both to the uterus and the rest of the membranes, by which the chance of separation is diminished. In proportion, therefore, as this separation would be dangerous, the risk of its taking place is lessened.

The decidua is very plentifully supplied with blood vessels of considerable size, but so very delicate, that they are thinner, and weaker, than what is called silk paper. The vascularity of the decidua is not a very late discovery, although one ingenious anatomist, lately dead, seems to claim it. Van Swieten* tells us that he saw Noortwyk inject a gravid uterus from the iliac artery, by which he filled the cellular covering of the uterus and chorion; or, in other words, the decidua and decidua reflexa.

* Comment. in Aph. 1304.

II. *The Inner Layer, and Decidua Reflexa.*

The reflection of one part of this layer, forming the decidua reflexa,* and the complete union of all the rest of it with the outer layer, forming, to appearance, only one membrane, called decidua, decidua externa, or decidua vera, has been already mentioned. From the description already given, it will appear, that the situation of the protruded, or reflected portion, must be different at different times. Until the ovum descends, the two layers are intimately in contact in every part; but, when the ovum reaches the uterus, it must either be retained in the tube, or rupture the inner

* Decidua protrusa would be a better name for this portion.

layer, which goes across the opening of the tube, or it must push it out before it. The last of these events happens, and the distension, or protrusion, continues until the ovum, with the distended decidua, comes in contact with the rest of the membranes which line the uterus. This happens about the third month. We shall therefore find, in our examinations made in the intermediate periods, the decidua reflexa projecting more and more into the cavity of the uterus, and approaching nearer and nearer to the decidua, in proportion as gestation advances.

The decidua reflexa, like the decidua which lines immediately the uterus, or the decidua vera, as it has been called, is much thicker in the beginning than in the end of pregnancy. It is smooth and

dotted on the surface next to the chorion, and shaggy on the other; and, in this respect, it differs from the decidua externa, or vera, which, when separated from the uterus, appears shaggy, or fringed, on both surfaces: But, in the end of gestation, it is exactly the same with it.

At first, the decidua reflexa unites with the shaggy vessels of the chorion; but these, by degrees, disappear, and the reflexa comes in contact with the chorion.

The best period for examining the decidua is in the sixth month, for then we find it exactly in the same relative situation as in the ninth month, whilst it is not so thin and tender. At this time, we can always, by a little previ-

ous maceration, and then dipping it for some hours in spirits to harden and define the parts, observe, that the decidua, just at the edge of the placenta, is separated into two layers, or divisions, the outer of which is continued into the placenta, whilst the inner turns obliquely down upon itself, covering the chorion.

At this time, by a little care, and after the preparation already mentioned, we may separate the two layers of the decidua, by beginning at the point of reflection. This being done, we find the chorion to be covered with two laminæ; first, the inner layer of the decidua (vera) which we have separated from the outer layer; and, second, the reflected portion of this layer, or the decidua reflexa. This reflected layer is

like an entire cap, or flask, enclosing all that part of the chorion which does not cover the placenta ; but the other lamina, or the inner layer of the decidua, is not entire, being discontinued at the os uteri ; for it is part of the decidua vera.

We likewise find, that, by cutting the angle of reflection, we can, by care, separate the reflected portion of the inner layer from the decidua vera. This being done, we find the chorion covered with the decidua reflexa, and the uterus lined with the decidua vera, which, as was mentioned before, consists of two greater layers, but may, by care, be still farther subdivided.

Lastly,* we may separate the cho-

* This account may, to some, appear to be tedious ; but I will rather incur the imputation of repeating too fre-

rion from the decidua reflexa, when we shall find the surface of the reflexa to be full of dots, which, most likely, are produced by the shrivelling, or conversion into ligaments, of those shaggy vessels of the chorion with which it had been originally blended.†

Such being the state of the decidua in the sixth month,‡ which is the most advanced period at which I have had an opportunity of examining it while re-

quently, and illustrating too minutely, than leave the reader in any doubt as to the connexions and appearance of this tunick.

† When we separate these membranes, in the third month, we may observe these vessels, in many places, still red, and efflorescing from the chorion.

‡ I have given the description from the dissection in the sixth month; but I might have had recourse to preparations

maining in the uterus, I shall now add, that, after delivery at the full time, the structure is much less distinct, and the appearance of reflection cannot possibly be perceived. At this time, the termination of the decidua is still very evident; but the decidua, the placenta, and the decidua reflexa, adhere all so together, that no angle, or appearance of reflection, can be observed. On the contrary, a kind of polypus-like substance, or lymphatick excretion, surrounds the rim of the placenta.

The decidua, and decidua reflexa, may, at this time, be still separated from each other, until we come to about a line

at a much earlier period, as in them the structure of the ovum is equally well marked. I have only preferred the sixth month, because the situation is exactly the same then as in the ninth month.

from the placenta. Here, as was just now mentioned, they become blended together, or unite strongly. When we trace the decidua from the uterine* surface of the placenta, and the spongy chorion from the umbilical surface, we find them likewise terminating in this line, or rim. At the meeting of these two, there is generally an angle formed, which is sometimes filled with coagulated blood, but more frequently with lymph, which makes the placenta appear

* It was formerly mentioned, that, besides the division of the decidua into two great layers, it might also be separated into several thinner laminæ, one of which could be traced over the uterine surface of the placenta, whilst the rest formed part of that gland. It is this lamina which I here allude to, and which we trace from this polypus-like rim over the placenta, whilst the rest of the decidua, with the decidua reflexa, appears to run into the placenta itself. Were we, therefore, to examine the membranes at this period only, we would deny the existence of a reflected decidua.

to be surrounded with a firm yellow margin.

The spongy chorion, or shaggy vessels of the chorion, which form the placenta, and afford, by their condensation, a firm covering to the umbilical surface (in the same way as the outer lamina of the decidua covers the uterine surface of the placenta) and which disappear, as has been already mentioned, on the chorion producing a dotted appearance on the surface of the reflexa, may here be seen pretty large, and converted into a kind of tendinous fibres.

The ancients appear to have known the deciduous coat of the uterus; but it was the celebrated Dr Hunter who first pointed out the reflection of part of it.

For some time, the decidua, although it increases in its surface, yet does not diminish in thickness ; but, after the sixth month, it grows gradually thinner, in proportion as the uterus expands, and it becomes larger. By the end of the ninth month, it is much softer, and greatly thinner than formerly ; on which account, the separation of the lower part of the uterus from the decidua, which necessarily takes place when labour begins, is followed by only a very trifling discharge of blood. If this diminution of thickness, and, consequently, of vascularity, had not taken place, then a much greater quantity of blood must have been lost, as we see exemplified in abortions, or those labours which take place before the decidua has become thin. Even in the seventh month, the common term for premature labours, there is often a considerable discharge of blood, but sel-

dom indeed to such an extent as to be called a flooding, unless the labour has been induced by such causes as produce a separation of the membranes more extensive than common.

The dilatation of the mouth of the uterus, in natural labour, uniformly produces a certain degree of separation of the membranes; and, consequently, more or less blood follows. But sometimes, from the operation of many different causes, a more extensive separation of the decidua takes place, either during labour, or during gestation. This regularly produces hemorrhage, which is always followed by abortion, if the quantity of blood lost be great; or, in other words, if the separation be serious and extensive.

We can easily conceive how blows

and falls should produce this separation ; but there are more obscure and unperceived causes, which are likewise capable of inducing the same effect. The application of cold, fatigue, costiveness, and passions of the mind, in a very great number of cases, do, by their action on the uterus, become the exciting causes of abortion. We cannot, however, in every instance in which they operate, detect their existence, because they do not commonly produce, immediately, any very sensible effect upon the uterus. It is by no means unfrequent for several days to intervene betwixt the application of the cause and the appearance of the hemorrhage ; on which account, the true cause is often forgotten, or overlooked. It is, however, chiefly, or almost entirely, in the beginning of pregnancy, that these slighter causes produce their effect ; because then the attachment of the pla-

centa and decidua, to the uterus, is much more delicate than afterwards, and the action of the different parts is less perfect.

Besides these causes, the death of the child will likewise produce a separation of the membranes, because then the connexion and sympathy existing betwixt the child, the placenta, and the uterus, are affected. The fœtal vessels in the placenta cease to act, which is very soon followed by such a change in the maternal part, as to produce a separation. It is difficult to say, whether this be frequently the cause of abortion; because it does not follow, that, when no other cause can be detected, we must ascribe it to this one. On the contrary, many cases of abortion appear to depend upon a morbid habit of the uterus, by which it ceases, at a certain period, to act and

enlarge any longer. At least, we may infer this to happen, from the regularity with which some women abort, whenever their pregnancy advances to a certain period, and that without any evident cause, and in spite of every precaution.

CONSTITUTIONAL diseases, or affections of the system, likewise produce this effect very frequently, particularly syphilis and febrile diseases, attended with a cutaneous eruption.

A WANT of correspondence in the distension of the uterus, and the enlargement of the decidua, will likewise, of consequence, produce a separation. If, for instance, the decidua follows its usual progress, whilst the uterus expands prematurely, or if it remains thick, and stops in its distension, whilst the uterus en-

larges in the proper ratio, then the cervix uteri must be separated from the decidua, which it formerly embraced. This, in one point of view, is a case exactly similar to that in which the placenta is attached over the os uteri; for, in both, the separation proceeds from a want of correspondence in the enlargement and actions of the uterus, and of the vascular substance in contact with it. But the cases differ materially in this, that less blood is lost in the one than in the other, the duration of the bleeding is much longer, and the cure is different; for, when the separation of the decidua causes the discharge, puncturing the membranes abates the flooding, which, in the other case, it does not do.

When the enlargement of the uterus, and the extension of the decidua, do not correspond, the woman never can go to

her full time, but will, from the separation which necessarily takes place, be delivered at a period, early in proportion to the time when the uterus and its linings ceased to act in concert.

When the causes inducing a separation of the decidua, or placenta, act slowly, and in the beginning of pregnancy, the woman generally complains first of coldness and shivering, followed by a greater or less degree of pain in the bowels and uterus, with a discharge of blood, which is accompanied with heat of the skin, head-ache, thirst, frequency of pulse, and often with sympathetick affections of the stomach or lungs. But, if the causes operate rapidly, or in the end of pregnancy, in which case the progress of the disease must be quick, then the discharge commonly appears without any previous affection ; and neither the

general system, nor particular organs, suffer, until some time after the discharge has appeared.

Abortion may happen at any period; but it is most frequent when the cervix first begins to distend, about the third or fourth month.

The practice here is much the same as in other hemorrhages, from internal parts. The general force of the circulation, or the action of the vascular system, is to be diminished, by bleeding, by rest, and by the removal of heat and other stimuli; whilst we, at the same time, lessen the action of the uterus itself, by the application of cloths, dipped in cold water, to the labia and vagina, and by the removal of costiveness, should it exist. If, after these means have been employed, the pain continues, opiates, conjoined

with antimonials, may very usefully be administered.

By this treatment, a farther loss of blood may sometimes be prevented, and the detached portion of the decidua, if it be small, be made again to adhere. But, when the disease is produced by the death of the child, or a morbid habit of the uterus, or, when a considerable portion of the membranes, or placenta, is detached, this desirable event will not take place. On the contrary, the hemorrhage, though moderated, still continues in a less degree, the blood insinuates itself betwixt the decidua and decidua reflexa, and betwixt the decidua and uterus, separating, by its coagulation and retention, still farther, the ovum from the uterus, which, now excited to action, begins slowly to contract and expel its contents.

In the early months, the simple means just mentioned will be quite sufficient; and all manual assistance is both impracticable and improper; because the mouth and cervix of the uterus are too firm to permit the extraction of the ovum; and if, in hopes of lessening the size of the uterus, and thus diminishing the bleeding, we burst the membranes, we only prolong the disease, and retard the expulsion of the ovum.* Even although delivery, or extraction, were practicable, it would seldom be necessary to have recourse to it; because, in almost every instance, the means already taken notice of will be sufficient to prevent any bad or

* In a great many cases, the membranes burst in the course of the disease; but this is not a desirable occurrence, and, luckily, does not inevitably happen, as in the latter months (when it is useful) because the membranes are stronger, when compared to the force which the uterus employs, and adhere less firmly to the uterus.

fatal consequences, from the bleeding, before expulsion takes place naturally; and, in these rare cases where they are not, plugging the vagina with cold compresses, will prevent any farther discharge, until the action of the uterus expels the whole.

The flooding which attends an early miscarriage, is, indeed, a disagreeable accident, but can, by no means, be compared to those dreadful hemorrhages which occur after the sixth month. The vessels are now so large, that the separation of even a small portion of the placenta* must be attended with a very

* In the early months, a separation of the decidua is, from its thickness, almost as dangerous as a detachment of the placenta. But, in the end of pregnancy, the disproportion, in the size of their vessels, is so great, that a separation of a very small portion of the placenta is much more dangerous than an extensive separation of the decidua, al-

profuse bleeding. This event may take place, either before labour, or during it; and must, of necessity, appear in every case where the placenta is attached over the os uteri. But this having been already noticed, the present observations may be confined to those separations which take place when the placenta is attached to its proper place.

This is always marked and distinguished by a flow of blood, and by our feeling the membranes at the os uteri.* This examination, however, must be made with care and delicacy, and only where

though even this is often attended with alarming bleedings. The two are seldom separated singly; for, in most instances, a portion of both is loosened at the same time, or, at least, the one separates soon after the other.

* This distinguishes it from the hemorrhages which are produced by the placenta being placed over the cervix.

the bleeding is such as to require an operation; because we might otherwise clear away a coagulum, which was restraining and moderating the hemorrhage. Now, as it is a fundamental maxim, that the more the os uteri has dilated, the easier is it to deliver, if the bleeding makes it necessary, it follows, that we ought to avoid, as much as possible, whatever may have a likelihood of obliging us to interfere sooner.

It is a general rule, admitting of very few exceptions, that, whenever a separation of the placenta, or membranes, takes place, in the end of gestation, labour is the consequence, if death does not prevent it. Our object, then, is to endeavour to moderate the hemorrhage, as much as possible, so as to allow time for labour to take place, without danger; and, when it does begin, to take such

steps as shall conduct it most safely and most speedily to a conclusion.

When a hemorrhage takes place, from the separation of the placenta (when it is attached to its proper place) or of a considerable portion of the decidua, before labour begins, or in the very commencement of it, we must, by absolute rest, and cold applications, endeavour so to lessen the flow of blood as to allow time for the os uteri to relax and dilate, without impairing the strength, by the loss of blood, during the time which this will necessarily require. But, if we find that we cannot thus moderate the rapidity of the hemorrhage, so as to permit us to delay interfering until the labour advances so far as to allow of delivery, we must restrain it, by bursting the membranes, and thus lessening the size of the vessels, by diminishing the volume of the uterus. Although this is

to be done in every instance where the bleeding continues unabated, yet we ought not officiously to have recourse to it very early, if we can avoid it ; because, if we pierce the membranes very early, the uterus is apt, for a time, to contract more feebly, and the labour to be longer protracted ; on the contrary, opening them at a more advanced period has quite a different effect, and excites brisker action. It is, perhaps, as much by inducing a powerful contraction of the uterus, as by diminishing its volume, and the size of its vessels, that evacuating the waters is useful ; because, although we remove two pounds of fluid from the cavity of the uterus, we shall still have the diameter of the vessels abundantly large to continue the hemorrhage, unless the fibres contract around them. The propriety, then, of piercing the membranes, at a time when the action of the uterus

is most likely to become brisk, provided this can be done, will readily appear.

By the use of rest, cold, or piercing the membranes, we are almost certain of moderating the bleeding, so as to enable us to wait, with safety, until the os uteri dilates to a considerable degree. After this, one of two things occurs; either the head descends, the uterus contracting briskly round the body of the child, and thus abating the hemorrhage; or, the uterus remains torpid, and the bleeding continues. In this last case, it is only left to us to turn the child, and deliver by the feet; or, should this be impossible, from the advancement of the head, the forceps, vectis, or crotchet, must be used, according to circumstances. These instruments, however, can only be necessary, either when the flooding has not come on until the head has advanced

thus far, and when a torpor of the uterus exists, or when, after piercing the membranes, the labour has continued brisk, for a certain time, and then gone off, leaving the vessels unsupported, and at liberty to bleed.

This might indeed be avoided, it may be thought, by turning the child early; but, when hemorrhage does not occur until the head has advanced so far, turning early was out of the question, because we could not foresee the event; and even when flooding does occur early, we may not find it expedient always to turn. Thus, for instance, we may be under the necessity of puncturing the membranes before the os uteri will admit of turning, after which, the labour may go on so safely, that we shall not wish to risk a renewal of the bleeding, by the irritation of turning, but trust to a natural deli-

very. Sometimes we may be disappointed in our expectation, and the action of the uterus may be suspended, but we can never fail in our ultimate object; because, if the child has descended a certain length, instruments will finish the labour; and, if it has not come so far, the uterus will always admit of turning, when the bleeding is such as to make it requisite. Where the contraction of the uterus prevents this, we can never lose much blood; and, hence, brisk pain is always a favourable circumstance in uterine hemorrhage.

I HAVE purposely omitted mentioning venesection as a mean of moderating the flow of blood in the beginning, because it is a doubtful remedy. We never can be certain, nay, can seldom even entertain the hope, of checking uterine hemorrhage, at an advanced period of preg-

nancy, otherwise than by delivery; and this always must be attended with the loss of a considerable quantity of blood; often as much as the woman can bear to lose without fatal consequences. It would not then be prudent, foreseeing this, to detract blood, especially as in the beginning we may moderate the hemorrhage by other means. If venesection were to be at all useful, it must, in a disease so obstinate as this, be pushed so far as to induce either deliquium, or a state nearly approaching to it. If this be not done, it has no influence on the uterine vessels. Now, every one must admit, that this leaves the patient in such a condition as to render any farther immediate loss of blood extremely dangerous; and, in most cases, the probability is, that a farther loss of blood must be sustained. This, at least, must be the case, unless the separation be very trifling; and we have no

criterion, by which we can judge of this, on the first appearance of the hemorrhage.

The practice, then, in uterine hemorrhage, proceeding from a separation of the placenta and membranes, may be reduced to the following rules:

First, Until the os uteri be so far dilated as to admit of turning, we must endeavour to moderate the hemorrhage, by rest, cold, and pledgets introduced into the vagina, in order to promote the formation of coagula. If these do not prove efficacious, or if the bleeding be violent, we must then pierce the membranes.*

* If the os uteri be firm, and the cervix only distended in part, as in the seventh month, for instance, we must dilate with the finger, or move it gently in until we feel the membranes, and then pierce them. When these hemor-

Second, If the hemorrhage still continues, after the labour has advanced so far as to open the os uteri to such a degree as to admit of turning, we must perform this, and deliver the child. But, if the contraction of the uterus has checked the bleeding, and the labour pains are brisk, we may allow the head to come forward, and leave the labour to its natural progress.

Third, If the hemorrhage should again return, from an abatement of the uterine action, we must either push back the head, and bring down the feet, or, if this

rhages come on before labour can be said to have begun, the os uteri is pretty high up; but, when they have continued for a little, the os uteri comes lower down, from the commencement of a contraction of the uterine fibres. Whenever the uterus begins to contract, it also begins to subside, and that whether the labour be in the seventh or the ninth month.

be impossible,* we must employ the forceps, or even lessen the head of the child, and extract it with the crotchet, if the bleeding be urgent, and the delivery cannot otherwise be accomplished.

It may not be improper, before finishing this subject, to add, that a separation of a portion of the membranes is not always immediately attended with a bleeding; because the rest of the membranes, adhering round the detached portion, may, for a time, confine the blood. Even a part of the placenta may, in this way, be detached without any immediate hemorrage.†

* Unless the head be far advanced, it may commonly be returned, if the torpor of the uterus be considerable; but sometimes the womb resists, although it contracts too feebly to prevent hemorrhage.

† The celebrated Albinus mentions a case of this kind, where the whole of the surface of the placenta was detached except its margin.

In these cases, it is, occasionally, a considerable time before the hemorrhage appears, the effused blood being retained, distending the uterus to a certain degree. This, at first, produces a dull pain in that part of the uterus where the separation happens; but this very soon becomes more severe, the contraction of the uterus commences, and the clotted blood is first discharged, mixed with that which is still fluid. After this, the blood flows in a stream, and the case becomes similar to those already described, both in its nature and treatment.

A flooding is indeed a truly alarming accident, and one of the greatest dangers to which a woman is exposed, either during gestation or labour. But there is no disease more easily understood; and, alarming as it is, the accoucheur can be called to none which more evidently

points out its own cure. The discriminating marks of the two great species of floodings* are so easily perceived, and the treatment is so exactly ascertained, that, when we hear so frequently of cases where the termination has been fatal, we must ascribe this, not to the fault of our art, or the deficiency of its principles, but to the ignorance or irresolution of him who rashly undertakes to practise it. What shall we think of that man who finds his patient weltering in blood, who, every time he feels the artery, perceives that the powers of life are rapidly declining, who sees death making a near and hasty approach, and yet neglects the necessary examination, and that bold, decisive practice, which, in abler hands,

* Namely, where the flooding proceeds from the insertion of part of the placenta over the os uteri ;—and where it proceeds from a casual separation of the decidua, or placenta, when it is attached to its proper place.

might have ensured safety? He has, indeed, good cause to blush, who cannot determine whether his patient bleeds owing to a wrong attachment of the placenta, or a casual separation of that gland, or of the decidua; and he has equal cause to be ashamed, whose humanity would prompt him every moment to give assistance, but whose ignorance prevents him from resolving what to do.

THE dead cannot profit by our future diligence; but, to become acquainted with the principles of our profession, is surely a duty which all who practise it owe still to the living.

CONCLUSION.

I CANNOT finish this subject, without again repeating, that the Anatomy of the

Gravid Uterus is the very foundation of the art of midwifery. A knowledge of this is the security of the accoucheur, amidst all the dangers of practice, and his truest guide in every difficult situation. I surely am not saying too much, when I affirm, that every rule of practice, every precept in midwifery, arises solely from the anatomy and physiology of the uterus; and, that he who is well acquainted with these points, and possessed of a common share of understanding, to deduce the necessary conclusion from his knowledge, requires no other assistance.

It is not by reading and remembering formal rules alone, that the student, when he comes to practise, is to excel in this department. Cases may very early occur, where these rules will not apply so exactly as he expected, and where all his treasured knowledge will fail. But, in

no situation can he be at a loss, if well acquainted with the structure and action of the parts concerned in parturition. At all times, he may, from this knowledge, draw unerring advice ; and receive, from the very symptoms and appearances which apprize him of danger, such direction as shall enable him fully to acquit himself, and faithfully to discharge that duty which he owes to his patient.

FINIS.